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LABOR BULLETIN

OF THE COMMONWEALTH OF

MASSACHUSETTS.

No. 26.

MAY, 1903.

PREPARED AND EDITED BY THE

BUREAU OF STATISTICS OF LABOR.

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MASSACHUSETTS LABOR BULLETIN.

No. 26. MAY. 1903.

TRADE AND TECHNICAL EDUCATION IN MASSACHUSETTS.

The information contained in the following pages, relating to trade and technical education in Massachusetts, has been condensed from the Seventeenth Annual Report of the Commissioner of Labor, Washington, D. C., and has been brought up to date as far as possible. We have abbreviated the report considerably, and would refer the reader desiring more detailed information to the volume in question.

No schools of an industrial character, or even with instruction of an industrial tendency, other than the Massachusetts Institute of Technology, opened in 1865, and the Worcester Polytechnic Institute, opened in 1868, were in existence up to 1870. That year was notable as marking the introduction of industrial drawing into the schools of Massachusetts. The extension of drawing in the public schools has continued, so that now it is a required study. According to the law enacted in 1898, every town and city must give instruction in drawing in its public schools, and any town or city may, and every town or city of 10,000 or more inhabitants must, maintain evening schools for the instruction of persons over 14 years of age in industrial drawing, both free-hand and mechanical (among other studies).

Manual training followed close upon drawing in its extension in the public schools. As early as 1870 instruction in sewing was obligatory in every public girls' school in Boston. Massachusetts now requires that "every town and city of 20,000 or more inhabitants shall maintain as part of both its elementary and its high-school system the teaching of manual training."

At the same time with the movement for industrial drawing and manual training in the public schools, a desire arose for more adequate provision for training in industrial design. The Lowell School of Practical Design, as a result, was established in 1872 for instruction in textile design. In 1895 the textile interests of the State secured the passage of an act authorizing the establishment of textile schools in cities having in operation 450,000 spindles or over.

The first school created under this act was the Lowell Textile School, opened in January, 1897. New Bedford followed with a school devoted especially to cottons in October, 1899, and action was taken later for a school in Fall River.

The need of such schools was to better the output of the mills in the North. The cotton mills of the South could produce cheap grades of cloth at less cost than those of the North, and the English mills could produce and sell in the United States the higher grades cheaper than it could be done by the Northern mills. The English and other foreign mills could also make the finest grades of woollen and worsted goods cheaper than they could be produced here. In order to overcome this competition of the foreign mills, it was necessary to learn *how* to produce the higher grades of cottons and woollens, and to do it as cheaply, so far as the manipulation of the stock and the methods of production were concerned, as did the foreign mills.

A prime essential for the accomplishment of this end seemed to be to raise up and train in this country a corps of men with the highest technical knowledge. This was the real purpose of the textile schools in Massachusetts; and while these schools furnish opportunity for the weaver, the spinner, the mechanic, etc., to learn his trade, yet the great object was to make a technical school where young men may be drilled in the science of the great industries.

Below are condensed general statements concerning the trade and technical schools; the first relates to the

North End Union Trade School, Boston.

The North End Union was started in 1892 as a continuation of the Hanover Street chapel. It is under the Benevolent Fraternity of Churches, which was organized in 1834 and incorporated in 1839, composed of delegates from twelve Unitarian churches. Its trade school is a combination of three schools; a school of plumbing, established in 1894 and said to be the first real trade school in New England; a school of dressmaking, established in 1895; and a school of printing, established in 1900. To be admitted to either the plumbing or printing school, pupils must be already at work at their trade and at least 17 years of age, and to be admitted to the school of dressmaking, pupils must be at least 18 years of age. Applicants for admission to the school of printing must have had at least six months' experience in the composing or press room of some printing establishment. The number of pupils at any one time is limited to, plumbing school, 33; printing school, 10; and dressmaking school, 10.

Tuition fees are: Plumbing school, $10 for the full course; printing school, $10 per term of fifteen weeks, two evenings per week; and dressmaking school, for nine months' course, $25, or $3 per month for less than the full course, also $5 extra for the "dressmaking system." There are three instructors in the trades taught, one being a master or employing plumber, one a practical printer, and one an experienced dressmaker. The supporting funds are raised from voluntary contributions and from the tuition and other fees paid by the pupils, the annual cost of maintaining the trade courses being $600.

The courses of instruction in the plumbing school are as follows: Fifty lessons in practical shopwork, as follows: Seams, overcast joints, cup joints, wiping horizontal round joints, wiping horizontal branch joints, wiping upright round joints, one-fourth bends, wiping upright branch joints, wiping a stopcock, wiping a flange on a 2-inch pipe, wiping a 2-inch ferrule, wiping a bath plug, wiping a vertical branch, wiping an upright flange, traps; also lectures on the science of plumbing. On completion of the above course, miscellaneous work is done, such as wiping 4-inch ferrules, making tank seams, wiping 2 and 3-inch joints, making service boxes, sand bends, and fancy work.

Printing school: No elementary work, such as teaching at the case, is undertaken. The plan of instruction includes book composition, job composition, and presswork (hand and job). Special attention is given to teaching the principles of punctuation, capitalization, etc. Pupils are instructed individually. Evening talks are also given by men who have achieved success in the special branch of the trade.

Dressmaking school: Course in advanced sewing. Applicants are required to pass an examination in simple sewing, this course being devoted to advanced sewing, and is as follows: Proper use of needles, thread, and thimble; position of body while sewing; method of weaving explained; basting and overhanding; turning hem by measure, hemming and running; stitching and overcasting; backstitching and felling; gathering, stroking gathers, and putting on bands; making buttonholes and eyelets; sewing on buttons; putting in gussets; talks on the nature and manufacture of cotton; herringbone stitching on flannel; patching; hemstitching; hemming and whipping ruffle; chain stitching, feather stitching, and mitering corners; French hem on damask; darning on scrim, stockinet, and cashmere; slip stitching and blind stitching; mending and darning. The pupil then furnishes material for making a petticoat, and is taught to use the sewing machine. Then follows: Taking measures; drafting, cutting, and making undergarments; talks on white embroidery; cutting, basting, and making nightdress; cutting, fitting, and making underwaist from pattern; cutting and making dressing sack from pattern; matching stripes and figures; talks on the manufacture of lace; cutting, fitting, and making a cotton dress without lining, also shirt waist and skirt of cambric or gingham; a child's dress made from pattern, by hand and machine.

Then follows a course on dressmaking: Instruction in taking measures; cutting and making skirt from measure; cutting, basting, and finishing one-half of model waist; pressing taught; practice in taking measures and drafting waist patterns of different styles; drafting sleeves, cutting waist and sleeves from pattern drafted; finishing waist; instruction in color and textiles applied to dresses; instruction in choice of materials; cutting and matching striped or plaid waist and skirt; talk on manufacture of woollen dress goods; taking measures and drafting simple princess dress of cambric or gingham; planning fancy waist of silk or other material; cutting and making the same; talk on manufacture of silk goods; the manufacture of cloth explained; drafting jackets of various styles; cutting, basting, fitting, and pressing; making of pockets and collars, lining and finishing. Talks are held on all pertinent subjects, and drawing lessons of three hours are given two afternoons each week.

Massachusetts Charitable Mechanic Association Trade School, Boston.

This school was opened October 29, 1900. Its objects are to furnish a sufficient number of journeymen mechanics to fill the demand, and to give American boys an opportunity to learn a trade. It is under the management of the executive committee of the Massachusetts Charitable Mechanic Association. The trades taught at present are bricklaying, carpentry, and plumbing. Each graduate is given a certificate, certifying to his mechanical ability and recommending him to the favor of employers in his trade.

There are three instructors, all of practical training and now employed as foremen in the three trades taught. At present, a room in the building of the association is used for the school, and the equipment at the opening of the school had cost about $2,000. Funds are provided by appropriations from the treasury of the association, and the cost of maintaining the school is defrayed from the same source and from tuition fees.

The sessions of the school are held in the evening only, on three nights of each week. Tuition is $15 for the term, covering also the cost of tools and materials, payable $8 when a pupil is accepted and $7 on January 1. Applicants must be not less than 17 years of age, able to read and write the English language, and must possess an elementary knowledge of the simple rules of arithmetic, fractions, and interest. They must be in good health, of good moral character, and each applicant must be vouched for by two reliable citizens.

Boston Asylum and Farm School, Boston.

This school was founded in 1814 for the purpose of training boys of deserving character to earn a livelihood. It was located on the corner of Salem and Charter Streets until 1833, when Thompson's Island was purchased, and there it has been located to the present day. It is a private institution, having no connection with the city of Boston, except that it is situated within the city limits. This school receives boys between the ages of 10 and 14 years, furnishes them with a comfortable home, affords them a grammar school education, and teaches them to work. All the boys attend the school one-half the day, and during the other half work at the various trades and occupations that are taught. At the age of 15 or 16 the boys are expected to have completed the course of study, and they then return to their relatives or friends, or positions are found for them to work at the trades or occupations they have learned, or homes are found for them on farms in the country.

In addition to its regular academic course of instruction, the school has regular courses for the teaching of carpentry, blacksmithing, printing, farming, marine engineering, the training of band musicians, and the training of pilots. Industrial training is also given some of the boys in the school bakery, laundry, and kitchen. In its so-called "Cottage Row" the school has a city, with its mayor and other officers, a bank, etc., and the boys are trained in the conduct of municipal affairs, banking, buying and selling real estate, stocks, etc.

The annual expense of maintaining the school averages about $20,000. The funds for this purpose come from invested funds, sales from the farm, amount paid by the Boston Board of Overseers of the Poor for board of city orphans at school, donations, etc.

Young Women's Christian Association School, Boston.

For years this association had maintained an employment bureau, and the incompetence of the majority of those who asked for work resulted in the establishment of a training school for domestics in 1878.

For admission to the school, good character is the first qualification. Pupils can be admitted only upon an agreement signed by themselves or their guardians that they will remain at least six months, and if they leave before the expiration of this period they are to be charged at the rate of $2 per week from the time of admission to that of leaving. If, however, they complete the course of six months, the instruction, including board and tuition, is free, the applicant being expected only to furnish a suitable outfit and to enter on a week's probation. No girl is admitted under the age of 16 years. Each graduate is awarded a diploma at the end of the course, stating only those lines of work for which she has shown special aptitude. The course includes cooking and sewing, general housework, chamber work, parlor work, laundry work, home nursing, sewing and mending, reading and spelling, penmanship and letter writing, arithmetic and geography, and daily scripture lessons.

Courses of dressmaking and millinery really form part of the school of domestic science (established in 1888), which aims to give scientific and practical instruction in all that pertains to the home and its management. The difficulty of obtaining a systematic and thorough training in dressmaking and millinery in the shops has led to many taking these courses with the end in view of fitting themselves to be competent and capable dressmakers and milliners.

The courses in dressmaking and millinery, in detail, are as follows:

Dressmaking — Educational sewing: Swedish sampler; basting, stitching, and overcasting; overhanding; folded edges; matching stripes; overhanding selvedges; hemming; fell seam; French seam, with bias finish; gathering, stroking, and putting on bands; making buttonholes and eyelets; sewing on buttons; making loops; sewing on hooks and eyes: putting in gussets; herringbone stitch on flannel; grafting for mending undergarments: overhand patch; hemmed-in patch; cashmere darning; stocking darning; hemstitching, fringing and damask hem for linen; tucking and whipping ruffles; mitered corners, chain stitching, feather stitching, slip stitching, cross stitching; care and use of the sewing machine, including hemming, tucking, ruffling, and sewing on lace; study of the textiles; history and processes of manufacture of fabrics and of sewing implements; lectures, collateral reading, papers, and field work; drafting and making of bibs, child's skirt, girl's skirt, lady's skirt, child's drawers, girl's drawers, lady's drawers, child's first waist, girl's waist, child's nightgown, lady's nightgown.

Dressmaking proper: First course, twelve lessons — use of Vienna tailor system; taking of measurements; drafting for stout forms; fitting and making in practice material; matching stripes and plaids; study of dress material as to color and texture. Second course, twelve lessons — designing, cutting, and making wool dresses. Third course, twelve lessons — study of general principles; drafting and making shirtwaist; drafting and making walking skirt. Fourth course, twelve lessons — drafting and making jacket; drafting child's dress. Fifth course, twelve lessons — drafting and making muslin gown. Special attention is given to study of color, form, line, and appropriateness of design throughout the course.

Millinery: First course, twelve lessons — renovating material, velvet, ribbon, feathers; wiring, making and placing folds; fitting facing; lining hat; bow and rosette making; making and trimming practice hat of canton flannel; making and trimming velvet hat. Second course, twelve lessons — draping; making and trimming toque or turban; binding edge of hat; making bandeau; drafting and making frames of buckram; making and trimming bonnet; study of children's hats. Third course, six lessons — shirred facing; fancy rosettes; use of lace, silk, and flowers; making straw hat and trimming same; trimming summer hats.

Drawing: This course is offered to assist the pupils in illustrating the lessons in educational sewing, also in making rapid sketches of gowns and hats. Lectures are given on color, form, and line to awaken the pupil's interest for the beautiful in dressmaking and millinery.

In the school for domestics there are three instructors, all graduates of the school of domestic science, and one a college graduate. There is one instructor in dressmaking and one in millinery. Funds for support of classes are obtained from contributions, legacies, annual subscriptions, personal gifts, and fees paid by certain classes.

Women's Educational and Industrial Union School, Boston.

This school comprises courses designed to teach the trades of dressmaking and millinery. Instruction in these branches is given by means of lectures, practical work, and examinations. Pupils furnish their own materials and make articles for their own use. Three terms of 24 lessons each are necessary to complete a full course in dressmaking and in millinery. A work test is required to join the dressmaking class.

Millinery: Instruction is first given in the making and trimming of all varieties of hats, followed by methods of making bonnets, etc. Special attention is given to making tasteful and stylish ribbon bows, and feather curling is taught in this course. Advice is given upon the suitability of materials, combinations of colors, and character of lines and forms. For day classes a fee of $10 is charged for a term of 24 lessons, and for evening classes a fee of $5 is charged for a term of 24 lessons.

Dressmaking: The preparatory course includes buttonhole making, machine sewing, and the drafting, cutting, fitting, and making of undergarments and dresses of wash material. A day class only is formed in this course, and a fee of $10 for 24 lessons is charged. In the regular course the pupil is taught the making, drafting, and fitting of different styles of skirts and waists. Pupils are shown a variety of materials, and are instructed in regard to the texture, color, and suitability of each for various uses. In the third term, tailor-made suits receive special attention. For day classes the fee for each term of 24 lessons is $10, and for evening classes a fee of $5 is charged for each term of 24 lessons.

A special normal class in dressmaking and millinery is formed for women wishing to fit themselves as professional workers, or for teachers of dressmaking or millinery. There are two teachers for these classes, one for dressmaking and one for millinery.

The annual cost of maintaining the courses in dressmaking and millinery approximates $1,800, the funds coming from fees paid by the pupils.

In 1897, the Union established a School of Housekeeping for the purpose of making a scientific study of the home and of conditions of daily life, to the end that the standard of living might be raised in all homes. In connection with the teaching of housekeepers was the training of houseworkers. The employers were taught by lectures and practical demonstrations, while the houseworkers had courses including all branches of domestic service, covering a period of either 18 or 36 weeks. Those taking the courses for houseworkers were not charged for room, board, or tuition, but in exchange for these the pupils gave their services to the school for the whole course.

The course for houseworkers was discontinued in 1901, and the School of Housekeeping was absorbed by Simmons College in 1902.

Simmons College, Boston.

Simmons College was established under the will of John Simmons, of Boston, who died in 1870. In 1899, the institution was incorporated for the purpose of "furnishing to women instruction and training in such branches of art, science, and industry as may be serviceable in enabling them to acquire a livelihood." The college was opened October 9, 1902. The plan of instruction provides for three classes of students. It offers to such students as are able to give the time a complete college training; it offers also shorter technical courses, and professional courses. The college maintains Saturday and evening classes for those who are unable to attend the regular classes.

We will consider in brief the courses in the departments of Household Economics, Secretarial Work, and Library Training. The regular course in household economics covers a period of four years, and prepares the student for professional housekeeping — institutional management largely, and social settlement work — or for teaching the subjects of household arts and sciences. There are about 50 pupils at present in the School of Housekeeping. The secretarial course is intended to give pupils preparation for professional business, and as private secretaries, registrars, or office assistants. Thorough instruction in stenography, typewriting, and office usage is included in this course. The library course is designed for the training of librarians, such course occupying four years.

The requirement for admission to any of the regular courses is that the student must be a high school graduate. For these courses the tuition fee is $100, payable in instalments of $50 each at the beginning of each term.

People's Institute, Boston.

This school was founded by the Robert Treat Paine Association, and opened to the working people of Roxbury October 2, 1890. Its objects are "to furnish working people the means of mental and moral improvement, mutual helpfulness, and rational recreation." With the above end in view, the institute has established evening classes and lectures for the teaching, more or less thoroughly, of certain occupations, etc., among other things. From the standpoint of the evening classes, this may be considered an industrial school. The branches of occupations taught are as follows: Dressmaking, millinery, embroidery, and drawing and designing. In these industrial classes there are nine instructors. The management of the classes is in the hands of the officers of the association and the superintendent of the institute. The annual cost of maintaining these classes approximates $1,000, and the funds are obtained from the association and from membership fees, which are only $1 per year per individual. This fee entitles the member to any or all the privileges of the institute.

Lowell Textile School, Lowell.

This school was incorporated "for the purpose of establishing and maintaining a textile school for instruction in the theory and practical art of textile and kindred branches of industry." The incorporators were representatives of the great textile corporations of Lowell, Lawrence, and vicinity. By the terms of the by-laws, at least three-fourths of the trustees must be "persons actually engaged in or connected with textile or kindred manufactures." This was to insure the practical character of the management and the instruction.

The school was formally opened January 30, 1897, and instruction began February 1, 1897. The new buildings of the school were dedicated on February 12, 1903. There are 19 instructors in the school; the principal, who also acts as professor of mechanical engineering; a professor of textile design and fabric structure; a professor of chemistry and dyeing; a head instructor in warp preparation and weaving; a professor of decorative art; a head instructor in woollen and worsted spinning; a head instructor in cotton spinning; an instructor in mechanical engineering; two instructors in chemistry; an instructor in woollen and worsted spinning and finishing; an instructor in the hand-loom department; an instructor in textile designing; an assistant instructor in cotton spinning; an assistant instructor in free-hand drawing; an instructor in dyeing; an assistant instructor in power weaving; an instructor in electrical engineering; an instructor in charge of modern languages; and, in addition, there are several lecturers on mill engineering.

The equipment of the school consists of high-grade machinery, with all latest improvements, specially built to afford facilities for all kinds of experimental work, and of such variety as is never found in any one textile mill. With the machinery already installed, the school claims to have a more varied equipment than any other existing textile school, either in America or Europe.

The day classes are especially intended for the instruction of those whose intention it is to enter the business of textile manufacturing in any branch. The courses are sufficiently complete to enable a person to start without any previous acquaintance with textiles, but at the same time, those who have been engaged in such business and wish to improve their knowledge and opportunities can devote their entire time to study most profitably. The complete collection of machinery enables every process to be practically illustrated. The student has the option of selecting any one of five regular or several special courses. Each course is intended to cover three years. The five regular diploma courses are: Cotton manufacturing; wool manufacturing; designing, general course; chemistry and dyeing; and weaving.

The courses of instruction in the day classes are comprised as follows: First year, first term — Design construction, cloth analysis, elements of mechanism, mechanical drawing, cloth construction, hand looms, general chemistry, and free-hand drawing. This is common to all courses, and at the end of this term each student is required to select which of the courses he is to follow in his subsequent studies, and the instruction to be given after the first term of the first year is specialized to suit each course.

Cotton Manufacturing. First year, second term: Cotton fiber, microscopic examination of fiber, design construction, cloth analysis, elements of mechanism, mechanical drawing, cotton manipulation, cloth construction, hand looms, general chemistry, and free-hand drawing. Second year: Cotton manipulation, machine drawing, textile chemistry and dyeing, designing, electricity, applied mechanics, warp preparation, weaving, and cloth analysis. Third year: Cotton manipulation, weaving, knitting machinery, designing, mill engineering, and thesis.

Wool Manufacturing. First year, second term: Wool fiber, microscopic examination of fibers, design construction, cloth analysis, elements of mechanism, mechanical drawing, woollen spinning, cloth construction, hand looms, general chemistry, and free-hand drawing. Second year: Woollen and worsted spinning, machine drawing, weaving, textile chemistry and dyeing, cloth analysis, applied mechanics, warp preparation, designing, and electricity. Third year: Wool manipulation, weaving, knitting machinery, designing, mill engineering, and thesis.

Designing. First year, second term: Design construction, cloth analysis, design sketching, mechanical drawing, elements of mechanism, cloth construction, hand looms, free-hand drawing, and general chemistry. Options: Woollen and worsted spinning and cotton spinning. Second year: Design construction, cloth analysis, design sketching and Jacquard work, decorative art, textile chemistry and dyeing, cloth construction, hand looms, weaving, and applied mechanics. Options: Woollen and worsted spinning and cotton spinning. Third year: Designing — advanced work, mill engineering, decorative art, weaving, and thesis. Options: Woollen and worsted spinning and cotton spinning.

Chemistry and Dyeing. First year, second term: General chemistry, stoichiometry, elements of mechanism, cloth analysis, qualitative analysis, mechanical drawing, designing, and hand looms. Second year: Textile chemistry and dyeing, chemical philosophy, applied mechanics, advanced inorganic chemistry, organic chemistry, and electricity. Options: Designing and weaving. Third year: Quantitative analysis, industrial chemistry, advanced textile chemistry and dyeing, dye testing, microscopy, and thesis. Options: Weaving and mill engineering.

Weaving. First year, second term: Design construction, cloth analysis, free-hand drawing, elements of mechanism, cloth construction, hand looms, mechanical drawing, and general chemistry. Options: Woollen and worsted spinning and cotton spinning. Second year: Design construction, cloth analysis, decorative art, textile chemistry and dyeing, applied mechanics, cloth construction, hand looms, loom construction, and weaving. Options: Woollen and worsted spinning and cotton spinning. Third year: Fabric structure, cloth analysis, analysis of weaving mechanism, weaving, mill engineering, cloth construction, hand looms, and thesis.

Candidates for admission to the day classes are required to pass an examination in arithmetic, English, geography, and algebra, or present evidence of proper qualification. The fee for the day course is $100 per year for residents of Massachusetts; for non-residents it is $150 per year. Special students pay, in general, the full fee, but if a course be taken involving attendance at the school during a limited time, application may be made to the principal for a reduction. All candidates for the diploma of the school must file with the principal not later than May 15 a report of original investigation or research, such thesis to have been previously approved by the head of the department in which it is made. Advantages are offered to persons for special research work.

The diploma of the school is awarded upon the satisfactory completion of either of the five regular courses, covering not less than three years, except where entrance is to advance standing. In such cases at least one year's residence is required. For the satisfactory completion of a three years' course in any special department, the certificate of the school is awarded; it is possible to complete such a course in less than three years, if the candidate be passed to advanced standing, but at least one year's attendance is required.

The evening classes of the school are intended to give thorough instruction to those who are engaged during the day in mills and workshops, to enable those who wish it to perfect their knowledge of the branches in which they work, to acquire knowledge of other processes than those in which they are regularly engaged, and in the course of several winters to complete a thorough technical education without interfering with their daily duties. The courses are: Cotton spinning, a three-year course; woollen spinning, a one-year course; worsted spinning, a two-year course; designing, a three-year course; chemistry and dyeing, a four-year course; weaving, a three-year course; mechanical engineering, a two-year course; also a course in warp preparation of one term. For the satisfactory completion of either of these courses, the certificate of the school is awarded; the diploma of the school is awarded in exchange for certificates of satisfactory completion of those subjects which go to make up any one of the several regular diploma courses.

The courses of instruction offered in the evening are identical with those of the day, with the exception that less time is devoted to the machine work. Ordinarily, the handling of the machinery is a part familiar to most of the students through contact with it in the daytime, and in such cases the explanations and calculations are of the greater importance.

The requirements for admission to the evening classes are similar to those for the day. Graduates of other schools are received on presentation of proper credentials; for all others, examinations are required. The candidates must be familiar with the English language and the principles of arithmetic. For the first part, a short composition must be written on a given theme, and a certain amount must be written from dictation; while in the latter are included addition, decimals, fractions, percentage, ratio, and proportion.

The evening courses are free to graduates of the evening high and drawing schools, operatives of the mills and machine shops, and other residents of Lowell, to such numbers as may be accommodated in the various classes. Applications are considered in the order in which received.

The fees in the evening classes are much lower than in the day classes, and are as follows: Cotton, woollen, or worsted spinning, fee for all except residents of Lowell, $2.50 per term or $5 per year; designing, or chemistry and dyeing, fee for all except residents of Lowell, $2.50 per term or $5 per year; warp preparation, weaving, or mechanical engineering, fee for all except residents of Lowell, $2.50 per term.

Lectures are given during the school year upon leather belting, general information on oils, electric driving in textile mills, fire protection in mills, cotton, cultivation of cotton, common uses of steam, water power, humidity in cotton mills, sizing compounds and their effect, method of cost finding in mills, patent law, and economy in steam plants.

The annual cost of maintaining the school is about $26,000, and the funds for building, equipping, maintaining, etc., are raised by State and city appropriations, tuition and other fees, and contributions from a friend of the school.

New Bedford Textile School, New Bedford.

This school was incorporated in 1895, the erection of the building was begun in 1898, and it was opened for instruction October 16, 1899. Money appropriated by the State and city built and equipped the school building. Much of the machinery was given or loaned to the school by the manufacturers. The annual cost of maintaining the school is about $18,000, which is met by State and city appropriations, together with fees. The building is the first erected in the United States exclusively for the purposes of a textile technical school.

The steam plant gives the students an exceptionally good opportunity of putting into practice their instruction on steam engineering, including as it does a feed water heater, oil separator, two feed pumps, and other accessories to a complete steam plant. The heating of the building illustrates both the direct and indirect systems, and arrangements are made by which the building can be heated by live or exhaust steam, and condensation water returned automatically to the boiler or otherwise. The building is equipped throughout with a system of Swedish mill telephones.

The school has a wide variety of cotton-mill machinery, and this feature of the school is considered as being almost perfect for the purpose of a technical school that is devoted exclusively to the teaching of cotton manufacturing. Almost every maker of cotton machinery in the United States is represented in the school, together with several English builders, giving the student an opportunity of becoming acquainted with machines varied in construction, although utilized for performing the same work.

The courses of instruction are divided into day and evening classes, and the courses are shown below:

Day classes: The principal course of instruction in the school is the general cotton manufacturing course, which is intended to give a student a general knowledge of all the cotton manufacturing processes, and sufficiently specific and complete information to qualify him to hold a position as superintendent of a cotton spinning or weaving mill, or other responsible position. The course covers three years. There are also five alternate courses: Yarn mill superintendent's course, one year; plain weave mill superintendent's course, one year; designer's course, two years; mill engineer's course, two years; dry goods commission house course, one year; chemistry and dyeing course, three years; and yarn preparation and knitting, two years. Students must be at least 14 years of age, and may be of either sex or any nationality. Those who have been students of other technical institutions, colleges, or universities, and graduates of high schools are admitted on certificates. Other applicants for admission to the school must either pass an entrance examination in arithmetic and English, or present satisfactory evidence of necessary qualifications in elementary education. The fee for tuition in the day classes is $50 per term of approximately four months, making $100 for the school year, for residents of Massachusetts. The fee for others is $75 per term, or $150 per year, in accordance with an act of the legislature. Diplomas are given on the satisfactory completion of a course of study.

The courses of study for day classes are as follows: The regular cotton manufacturing course is intended for the training of men aspiring to the position of agent, superintendent, overseer, or other responsible position in a cotton mill or a cotton machinery works, or to give an opportunity to a man holding a responsible position to perfect his knowledge of the cotton mill business. It includes: First year — plain weaving, fancy weaving, designing, hand-loom work, mechanism and machine drawing, warp preparation, and calculations; second year — cotton picking, carding, combing, and spinning, steam engineering, advanced designing, and mechanism and machine drawing; third year — advanced weaving, manufacture of combed yarn, designing for pile and Jacquard fabrics, mill engineering, and knitting or dyeing. Facilities are given in the third year for the students to carry on experimental work, and each student graduating is expected to write a thesis, or perform some special work in connection with some matter of general interest to a cotton manufacturer.

The yarn mill superintendent's course is intended to qualify a man to hold a position as superintendent of a cotton yarn mill, boss spinner or boss carder, or other responsible position in connection with a cotton carded yarn mill or cotton machinery works. It includes cotton picking, carding, and spinning, machine drawing and mechanism, and steam engineering.

The weave mill superintendent's course is intended for men who desire to become superintendents of weaving mills, boss weavers or fixers, or to hold other positions requiring expert knowledge of plain weaving. It includes warp preparation, weaving, designing, hand-loom work, machine drawing, mechanism, and steam engineering.

The designer's course is intended to qualify a man to hold a position as a designer in any textile mill, whether cotton, woollen, worsted, or silk. This, in the first year, follows the lines of the general cotton manufacturing course. The second year of this course, however, is different, almost exclusive attention being given to designing and practice on hand and power looms.

The mill engineer's course is intended for those men who desire to follow the occupation of a textile mill architect or engineer. This follows the lines of the general cotton manufacturing course, excepting that especial attention will be given to instruction with regard to power plants, mill designing, and engineering and transmission of power.

Evening classes: The school is in session four evenings per week for the benefit of those students who are engaged in the mills and workshops during the day. Practically free education in any or all branches of cotton manufacturing is offered to those who cannot defray the whole cost of their textile education. No difference is made between the courses of instruction of the evening and those of the day. The same machinery and same instructors are retained for the evening classes, and, in order to accommodate the larger number of students found in the evening technical schools, additional instructors have also been engaged for the benefit of the evening students alone.

A special feature of the evening instruction is in the minute subdivision of subjects, so that any one employed in the mill will find in the plan of studies something that will assist him or her, and which will apply to the department in which he or she is daily engaged, and yet will not necessitate an entry for a long course of study in order to get such instruction as is desired. Satisfactory evidence of ability to read and write English and a knowledge of elementary arithmetic are required. The fees for the evening classes are uniformly $2.50 per term of three months in each subject. Students taking two subjects and attending four evenings per week pay $5 per term. In a few subjects instruction is given free to residents of New Bedford. The staff of instructors numbers 17, principally mill overseers and superintendents, or those formerly holding such positions.

For evening classes the course in carding covers picking and card-room machinery, including combing, to be completed in a two-years course, two evenings a week. Mule spinning is a one-year course, two evenings per week. Ring spinning is a one-term course, two evenings per week. Cotton sampling is a one-term course, one evening per week. Spooling, warping, and slashing is a one-term course, two evenings. Weaving and fixing course covers plain and fancy weaving and loom fixing on all the different makes of American looms. It is a two-years course, two evenings per week. The second year of this course is devoted to fancy weaving, including dobby and drop-box looms, both weaving and fixing. The Jacquard weaving course covers one year, two evenings per week.

In the designing department, a course in cloth dissection is intended to be a primary designing study sufficient to meet the requirements of those connected with the weaving departments of the New Bedford mills without qualifying them to hold positions as designers. It is a one-year course, two evenings per week. Hand-loom work is given a two-year course of one evening per week. The full course in designing covers designing of all kinds of cotton fabrics, including both cloth dissection, cloth construction, and hand-loom work. It is a two-years course. This class is taken in two sections, as follows: Elementary — three evenings per week; advanced — three evenings per week. A course in mill arithmetic is of one year, two evenings per week. A course in yarn-mill arithmetic covers one year, two evenings per week.

Bradford Durfee Textile School, Fall River.

This school was organized in 1899, and it is expected that the building which it will occupy will be completed during the summer of 1903. The total cost of the plant when ready for operation will be in the neighborhood of $150,000, not including the cost of the land, which was a gift from the heirs of Bradford Durfee, after whom the school has been named. The establishment of this school was the result of the efforts of the Fall River Loom Fixers' Association, its members being fully alive to the fact that a proper course of training was necessary to make an expert operative. Upon approaching Mr. Leontine Lincoln, of the firm of Kilburn & Lincoln, in August, 1897, and explaining their wishes and the results they desired to obtain, he entered into the plan and heartily supported the idea. He gave the first loom for the association's use, and so enthusiastic were the members that they voted to place it on a float on Labor Day, take it apart, rebuild it, put in a plain warp, and weave as much cloth as possible during the parade. With the aid of four expert fixers all this was done. The first yard woven was presented to Mr. Lincoln, and the remainder was cut into small pieces and given away as souvenirs. Other men came forward and gave looms and other equipment, and the association's school progressed until it reached its ultimate development in the present incorporated textile school, with Mr. Lincoln as president.

American Correspondence School of Textiles, New Bedford.

This school has been in existence for several years, having been first established in Lowell. Its purposes and methods are similar to those of all correspondence schools, and the courses cover substantially the same details as the textile schools, so far as is possible by correspondence.

Students of the school who complete the course and have graduated are entitled thereafter to the benefits of the school by the payment of a small fee to cover cost of printing, mailing, and answering their inquiries. This applies only to students who have completed a full course in any subject. The primary knowledge required for enrollment in the school is only that of reading and writing.

This school is divided into the following departments: Department of cotton manufacture, department of fabric designing, and department of woollen manufacture. The courses in the department of cotton manufacture are intended for treasurers, agents, superintendents, overseers, second hands, third hands, mechanics, spinners, loom fixers, weavers, and other workers in cotton mills and machine shops, salesmen in commission houses, jobbers, converters, dry goods merchants, mill engineers and draftsmen, machinery salesmen, and others. The courses are the following: Complete cotton mill superintendent's course; cotton mill arithmetic course; cotton carding and spinning course; cotton spinning and warp preparation course; cotton warp preparation and plain weaving course; fancy cotton weaving course; cotton carding, spinning, and plain weaving course.

The courses in the department of textile designing are intended for designers and assistant designers, agents, superintendents, overseers, and second hands in weave rooms; section hands, loom fixers, weavers in cotton, woollen, worsted, or silk mills; dry goods merchants, salesmen in commission houses, jobbers, and all persons interested in textile designing. The following courses are laid out: Complete designing course; designer's calculations course; textile coloring course; theory of designing course; cotton designing course; woollen and worsted designing course; silk designing course.

The courses in the department of woollen manufacture are intended for treasurers, agents, or superintendents of woollen mills; also boss carders, boss spinners, and other overseers, section hands, and those who desire to qualify for such positions. They are also recommended to mill engineers and draftsmen, woollen machinery builders, erecters, salesmen, dry goods merchants or salesmen in commission houses. They are as follows: Complete woollen course; woollen arithmetic course; woollen carding and spinning course; woollen warp preparation and weaving course; fancy woollen weaving course.

There are 10 instructors engaged in teaching in these courses, in addition to a director, in whose hands the management of the school lies.

Waltham Horological School, Waltham.

The need of better and more thoroughly equipped workmen in the trade of watchmaking, repairing, etc., led to the establishment of this school in 1870. Under modern conditions in the factories where watches are made, the workmen are kept on special branches of the work, and no one has the opportunity to practise or learn the whole of the trade. The same thing is true in the job shops, where most watch repairers are trained, and as a result, competent watchmakers who thoroughly understand the whole business and can make the complete watch, carrying it through all the different operations, are very few. When a student has finished his course in this school, he is able to make a complete watch, and is also a first-class repairer. While he may, and probably will, after graduation, devote himself to some one or possibly two branches of the trade, yet because of his thorough ground work he will be the more competent.

The hours of work in the school are eight on every week day except one when the number of hours is nine. Work is also required during such evenings as may be chosen by the manager. The charge for tuition is $65 for the first three months, $50 for the second three months, $45 for the third three months, and $40 for each three months thereafter, payable quarterly in advance.

The course of instruction covers the following branches:

Plates: Punching rough blank, depthing and recessing for train, drilling, and tapping, barrel punching, turning, cutting teeth, and fitting arbor. *Wheels:* Punching rough blank, cutting teeth and finishing for the train wheels, lever, duplex and chronometer escape wheels, and all the wheels used in watches. *Pinions:* Cutting of rough blank, turning ready for cutting, cutting levers, pivoting, tempering, and polishing. *Jewels:* Slabbing and sawing rough stones, drilling, turning, polishing, opening and finishing hole to fit pivot. All kinds of jewels are made, such as centers, plates, end stones, palates, balance, rollers, duplex rollers, chronometer detent, impulse, lifting, and jewels for all purposes for which stone is used. *Balances:* Punching rough steel and brass, turning, fitting, brazing, recessing, crossing, drilling, tapping, and finishing. *Staffs:* Pupils are required to make staffs for all classes and kinds of watches, from the rough stock to the perfect finish, from samples, or from measurement where the staff is lost. *Jeweling:* Pupils are required to locate train, prepare the plates for setting jewels, and prepare jewels and settings for same, set them, fit to pivots, true settings to fit places, end shake, surface settings, drill, tap, counterbore, strip, and finish their work equal to the best produced in any watch factory. *Springing:* Pupils are required to fit the balance to the staff, cut, true, and poise the balance, pick out the spring, fit it to collet, true it, vibrate it on the balance to time, pin it into the watch in beat and time by seconds. *Screws:* Made from rough stock, turning, cutting thread, slotting, hardening, polishing, and bluing. *Stem-winding parts:* All stem-winding parts, such as crown wheels, winding pinions, winding and intermediate wheels, rockers, levers, collets, springs of all kinds for all classes of watches. *Matching:* Pupils are required to put the escapement together, setting the palate stones, adjusting for lock, drop, and let-off, also set jewel pins, adjust roller action, and see that the watch is in perfect beat. *Finishing:* Pupils are required to see that all parts are thoroughly fitted, that there is the proper amount of end and side shake to the train, that the escapement is in perfect order; that let-off, lock, and drop are correct, and that the banking is properly set; that the roller action is perfect, and the watch in beat. *Adjusting:* Pupils are required to see that the balance is properly trued and poised, and the hairspring properly set and trued. The first test is for heat and cold, and when the balance is properly adjusted, the test is made for isochronism; after that is obtained, errors are corrected for position. *Repairing:* Pupils are required to replace old parts with new, also pivoting, bushing, and all other things pertaining to putting a watch which is out of order in good repair. *Tools:* Pupils are taught to make and keep in repair pinion, wheel, and jeweling cutters, drills, turning tools, taps, dies, and all necessary tools.

Ophthalmology: Instruction in this branch is designed to give the pupil a thorough knowledge of the eye, how to fit glasses, and how to treat any ordinary disease of the organs of vision. *Engraving:* All pupils who wish can receive instruction in all branches of engraving by a competent teacher without additional expense.

Diplomas are given to all who successfully complete the prescribed course. Students are expected to purchase the smaller tools they use in ordinary bench work; the expense need not exceed $20. Lathes and lathe attachments and the more expensive tools are furnished by the school. The school has four instructors, including a teacher of engraving and a teacher of optics, who is a regular physician and oculist. The annual cost of maintaining the school is $4,500; this amount is raised from the money received from pupils in fees.

North Bennet Street Industrial School, Boston.

This school was established for the purpose of giving a general education and instruction in manual training to the children of the poor. A special course started in 1897, which teaches clay modeling as applicable to wood and stone carving, teaches a recognized trade, and consequently has a right to consideration here.

The instructor, trained in stone works in England as a modeler and wood and stone carver, follows such course of instruction as seems best to him. The school is open to workmen in the shops, as well as boys over 14 years of age. There is no fixed period of study and no formal graduation, and a pupil is not considered as having finished his course until the instructor says that he is fitted for employment at the trade. The annual expense of maintaining this course is very small, and the funds for this and all other purposes of the school come principally from donations.

Wells Memorial Institute, Boston.

This institute has been in operation twenty-three years. Its objects, as stated by its constitution, are "to provide working people the means of social intercourse, mutual helpfulness, mental and moral improvement, and rational recreation." It carries on mechanical and industrial evening classes and a system of free lectures. The classes include courses in architectural and machine drawing, practical electricity, steam engines and steam engineering, dressmaking, millinery, cooking, and stenography and typewriting. For these courses there are eight well-trained instructors. The only fees charged are an entrance fee of 50 cents for each course, and the $1 per year fee for membership in the institute. The funds for maintaining these classes come from the fees and contributions, and they are managed by the officers of the institute and its superintendent.

Free Evening Drawing and Trade Classes of the Public Schools, Springfield.

These classes were established to provide for young men desirous of adopting industrial pursuits an opportunity to gain a good knowledge of machinery, etc. The classes in free-hand drawing and drafting were established over 20 years ago, and classes in tool making, machine-shop practice, and plumbing were started in the autumn of 1898. These classes are under the management of the school committee of the city and the superintendent of schools.

The object of the free evening drafting classes is to teach mechanics and others, either men or women, the principles of mechanical drawing used by designers, decorators, architects, machinists, and engineers. Those wishing to attend free of charge must reside in Springfield, must be more than 14 years of age, and must not be members of the public day schools. Non-residents are charged $10 for the term of twenty-one weeks.

The outline of the work is as follows: Beginners' class (two evenings per week); use of tools and the drawing of plane figures; orthographic projection of solids, and the principles of same applied to the making of working drawings. Middle class (two evenings per week); the development of surfaces of solids, isometric projection, theory of the screw, and the laying out of practical working drawing, line shading. Advanced class (two evenings per week); machine and architectural drawing, class and individual instruction in the principles of cams and gears, the laying out of practical working drawings from models and figured sketches, practice in tracing, and instruction in blue printing; class and individual instruction in house planning and details of same; architectural perspective and the coloring of drawings. These different branches are arranged in a series of courses, covering each subject in such a practical manner as to make it possible for any student to fit himself for a position as draftsman in any of the different trades.

Persons to be admitted free to the evening free-hand drawing school must be residents of Springfield, not less than 15 years of age, and must not be members of a public day school. Non-residents are charged $10 for the session. One lesson a week is required. Elementary class; still life, simple casts, etc., in charcoal. Intermediate class; still life, historic ornament, and casts from details of human figure in charcoal. Advanced class; drawing from life in charcoal, pencil, pen and ink, and brush; pictorial composition.

Applicants for admission to the evening trade classes in tool making and machine-shop practice are required to furnish satisfactory evidence of fitness to do the required work. They must have a practical knowledge of such machines as the lathe, shaper, and drill press, and the tools which accompany them. They must also give satisfactory references. From time to time test pieces of each student's work are subjected to measurements by standard measuring machines. The degree of accuracy in the student's work, as shown by these authorized tests, determines his standing, and forms the basis on which certificates of proficiency are granted. Three of these certificates entitle a student to a diploma. At least three years are required to complete this course. The tuition is free to residents of Springfield, and $15 per term for non-residents; a fee of $5 for incidentals is charged to all members of these classes, resident or non-resident.

The course of instruction begins with the use of the simpler testing tools, such as calipers, gauges, and micrometers in machine-shop problems. After these preliminary exercises, the construction of simple tools, such as mandrels, twist drills, reamers, butt mills, milling cutters, taps, and dies is begun. These tools are first finished in the rough, and afterwards tempered and ground to accurate dimensions. They are not accepted unless they are as accurate as tools of their class produced by the best makers. The next step in the course is the making of standard gauges, such as fixed or snap gauges, standard plugs, and collar gauges. Practice is also given in designing and making special gauges for testing certain parts of the work involved in high-grade manufactured products. The final steps in the course include the more complex and original processes for which the preceding practice has been a preparation. This work involves the making of machine tools which are to be used in the production of the interchangeable parts of machines. In this class of tools are included jigs, templets, punches, dies, etc. A course of mechanical drawing accompanies the shop-work on the lines necessary to a proper understanding of the details of the mechanical processes.

For the evening classes in plumbing, the tuition is free to residents of the city, the fee being $20 for non-residents. The outline of the work in the classes follows: First year: The theory of plumbing practice — (1) Metals and alloys; solder and its manipulation. (2) Hydraulic rams, how to set and put in operation; practical demonstration. (3) Pumps, single and double acting, how to connect and repair. (4) Water and its distribution; service pipes; friction, adjustage, pressure, and velocity; *vena contracta.* (5) Water supply; water hammer, cause and remedy; noises in water pipes; air locks in water pipes, cause and remedy. (6) Water regulators; reducing the pressure; practical tests with gauge. (7) Water meters; how to read; sample for practical demonstration. (8) Filters and filtration; samples. (9) Kitchen range boilers, single and double, with various connections, showing faulty and correct method for hot-water circulation; upright and horizontal setting; circulation of water; illustrated with charts. (10) Storage and house tanks; safety and vacuum valves; faucets, how to repair, showing various patterns; freezing of pipes; thawing of pipes. (11) Cottage house plan and specification; city, tenement, and apartment house plans for supply pipes.

Manual instruction — Methods of joining metals; tools, names and uses; straightening pipe; preparing pipe ends; cup joints; overcast joint; making and putting on tacks; cleaning and testing solder; wiping joints, supply pipes only; horizontal and upright, round and branch, 3-way joints; packing bibbs and ball cocks; wiping in and adjusting bibbs for sinks and laundry tubs; setting up and connecting boilers with range and house tank; tank lining and pipe connections.

Second year: Theory of plumbing practice — (1) Heat, ventilation, local and drain; practical demonstration. (2) Drainage systems; subsoil drains, cellar drainers; cesspool construction; sewer, drain, soil, and vent pipes. (3) Subsoil drainage; cellar drainers; demonstration. (4) Ventilation of house drains; fresh-air inlets; frozen vent pipes; plenum and vacuum in a drainage system; foul air, where discharged. (5) The siphon and its action upon house plumbing. (6) Traps and siphonage; grease traps; where should a trap be ventilated? (7) Traps tested, showing merits and demerits of the various traps; samples of twelve makes. (8) Fixtures; baths, sinks, urinals, lavatories; laundry tubs, tank valves. (9) Water-closets; care of plumbing fixtures. (10) Proper arrangement of plumbing fixtures.

Manual instruction — Wiped joints, round and branches, on 1¼ to 4-inch lead pipe, also of angle; wiping on 2 and 4-inch ferrules; wiping side and floor flanges; wiping flanges on traps; wiping joints used in electric conduits; sand bends, springs, etc.; sand bend offsets and angles; soil-pipe joints, upright and horizontal; setting up soil-pipe drainage systems; setting up plumbing fixtures; lead burning.

In the above classes six instructors are engaged in teaching. Three of these are teachers of mechanical and free-hand drawing, two are teachers of machine shop work, and one of plumbing. The annual cost of maintaining these classes is paid by the city.

Young Men's Christian Association School, Boston.

This school was established in 1896 to provide for the educational needs of those who have been deprived of a good foundational education. The school aims to educate the student in just as broad a sense as his ability will permit, and every course is framed and conducted on an educational basis, with strictly practical ends in view. Perfect freedom is allowed in the matter of studies selected, provided those are taken which are adapted to the abilities of the student. There are 12 departments, or 112 courses of instruction, but only the drafting and art departments come within the scope of this report as being clearly industrial in character.

The elementary drawing class offers a course in the principles underlying all mechanical and architectural drawing. This class is a feeder for the advanced classes into which students will be promoted at any time they are prepared. Geometrical problems, shadows, intersections, projections, and all the elementary principles will be fully presented in a clear and practical manner.

In mechanical drawing the course comprises instruction in machine drawing, sketching from the machine, the construction of scale drawings and tracings, and the preparation and use of blue-print paper. The object of this course is the production of finished detail and assembly drawings for shop use. A practical knowledge of projections and shading, as well as some proficiency in the use of drawing instruments, is most essential, these subjects being given in the elementary class.

The object of the course in mechanical design is to provide practical instruction upon a number of subjects relating to engineering work. A special class is provided for advanced mechanical drawing. To enter this class the student must be somewhat familiar with mechanical drawings; he must also be possessed of a good knowledge of arithmetic. The course consists of twenty-four lectures upon the subjects scheduled, many of the problems being demonstrated by apparatus, dummy engine gears, etc.: (1) Strength of materials; (2) standard bolts; (3) levers; (4) screws and toggle joints; (5) cams; (6) belts; (7) ropes; (8) pulleys and shafting; (9) and (10) gears; (11) and (12) riveted joints; (13) to (16) boilers; (17) and (18) steam engines; (19) and (20) steam-engine indicators; (21) and (22) iron and steel manufacture; (23) and (24) mill structure. Each student is required to keep a note book, and work out numerous problems in connection with the above topics.

The three-years course in architectural drawing aims to acquaint the student with the scientific principles underlying the study of construction, and with the elements of mathematics and mechanics necessary to the solution of architectural problems. The first year's work consists of the proper use of instruments, geometrical problems, intersections, shadows, and lettering. Free-hand drawing from the cast and model should be taken during the entire three years. One foreign language is also offered during the same time. The strictly professional work begins in the second year, with instruction in the classic moldings, five orders, timber, brick, and stone construction, pen and ink rendering, architectural history, and elements of design. The third year the student is thoroughly drilled in original design; instruction is also given in shade and shadow rendering in India ink, perspective, business law, heating and ventilation, and steel, stone, and brick construction. Applicants for admission to the second or third year classes, omitting the previous grades, must show that they possess the requisite knowledge.

The revival in the shipbuilding interest of the United States is calling into activity a class of draftsmen who for years have been in slight demand. Ship draftsmen have been so little called for during the past fifteen years that few have fitted themselves for this particular field, and now that they are in demand the supply is inadequate. With the wish to place this much desired instruction in the reach of draftsmen, students, and yachtsmen, the following courses have been framed: First year — Drafting: Lines — sheer plan, half-breadth plan, body plan, midship section; projections — water lines, cross sections, diagonals, section lines. Construction (steel or wood): Keel, keelson, frames, floors, deck beams, planking or plating, decks, ceiling, riveting or fastening. Second year — Calculations: Displacement, center of buoyancy, areas of cross sections, areas of water lines, areas of lateral plane, areas of midship section, displacement per inch, center of lateral plane. Yacht construction: Keel, keelson, frames, floors, beams, clamps, decks, planking, fastening. Lead keels: Calculation of weight; calculation of center of gravity. Sail plans: Calculation of area, calculation of center of lateral resistance, calculation of balance. The instruction in mechanical lettering covers two hours per week.

The course in free-hand drawing includes drawing from the object, forms, plaster casts, and life; instruction in the use of pencil, charcoal, and brush; perspective; elements of design, and technical application.

A course in practical design, as employed in the arts and crafts, includes such subjects as stained glass, furniture and drapery, wall papers, printed fabrics, book covers and inlaid work, the study of form as applied to pottery and its decoration, wrought and bent iron-work, wood and stone carving, and interior decoration. The term is divided into two sections. The first is devoted to the study of the various styles of historical ornament, animal and plant forms, and the principles of construction in design. The second is devoted to the practical application of design, the technicalities of the various arts and crafts, the final rendering of design in charcoal, pencil, pen and ink, and water colors.

The course in sign writing offers complete instruction, including the preparation of new and cleaning of old boards; the mixing of paints and sizings for all purposes; bronze, gold, and silver lettering; gold and silver lettering on glass, worked up in numerous ways, being placed on the back of the glass; lettering on card and cloth; gold and black lettering on office doors; treating with gold, silver, and aluminum on any surface; lettering on banners (silk or cotton); sign advertising on walls and fences in all its branches; fancy lettering of every description — monograms, scrolls, and striping.

A course is given in drafting gentlemen's garments, the system taught being well adapted to the needs of merchant tailors and garment workers.

The number of instructors in the institute in 1902 was 60, of whom 12 devoted all, or part of, their time to instruction in the department of drafting and art. Members of the evening institute are required to hold a $5 association membership ticket or a $10 gymnasium ticket, and in addition to pay, in either case, the small class fee for each subject.

The following annual class fees are exacted: Architecture — elementary, $3, advanced, $4; free-hand drawing, $3; industrial design, $3; lettering (mechanical), $2; mechanical drawing — elementary, $3, advanced, $4; mechanical design, $4; ship drafting, $5 and $8. The cost of maintaining this department is procured from tuition fees, from the endowment fund, and from subscriptions of members of the association.

School of Drawing and Painting, Museum of Fine Arts, Boston.

The act incorporating the Museum of Fine Arts was passed in 1870, and in recognition of the great need of a school where those desiring could secure an art education, provision was made for its location in the museum. The school was established in 1876, and rooms were provided for it by the trustees of the museum.

On entering the school, each pupil is placed immediately in the class for which fitted, and advancement thereafter is regulated by the judgment of the instructors. Pupils in all departments are allowed the free use of the galleries, collections, and library of the museum, and during the morning hours are given the preference over the pupils of any other school in the choice of places for drawing in the galleries.

Diplomas are given, upon application, to those students who have fulfilled the requirements of the committee. In the department of decorative design, these requirements include satisfactory work during the prescribed course and satisfactory examinations in perspective.

Upon joining the school for a period of one or more terms, pupils are required to pay an entrance fee of $10. In addition, the fees for tuition, which are the same in all departments, are as follows: First term, twelve weeks, $45; second term, twelve weeks, $45; third term, nine weeks, $35. Pupils who have paid the fees for the first two terms of any one year are entitled to free instruction for the third term of that year. Advanced students who desire practice and criticism in drawing from the cast or model for a shorter period than a term are admitted by the month, upon the approval of the instructors, paying $25 for their first month and $20 per month thereafter.

The school awards ten scholarships at the end of every year, each entitling the holder to free tuition for the year following. Four of these are limited to advanced students, and the rest may be applied for by any regular student of the school to whom such aid is necessary. A special scholarship enables a pupil "who shall have been most proficient in painting" to study art in Europe for two years. This is open to both men and women, and is given to the pupil who is recommended by the managing committee of the school as most worthy to receive it. Another scholarship is for young women only, and gives to the holder free tuition for a year, with $100 in addition. It may be awarded to the same person in successive years at the discretion of the committee.

The school has three departments, one in drawing and painting, one in modeling, and one in decorative design, with supplementary instruction in anatomy and perspective. Informal lectures are also given to pupils of the school upon the arts represented in the collections of the museum. In this school there are a manager and eight instructors. The cost of maintaining the school is derived from fees of students and contributions of friends.

Eric Pape School of Art, Boston.

This is primarily an art school, but also has courses in industrial design. It was established by its proprietor in 1898. There are no examinations for admittance to any of the classes. Students begin at once to draw from the nude and draped model. Advanced students are instructed in grouping and composing on canvas. Students can obtain free entrance cards to the Museum of Fine Arts, and can work in the art rooms of the Boston Public Library. The management of the school is in the hands of its proprietor, who is also the director and head instructor. There are three principal instructors and one assistant.

The courses for some of the classes, with terms, are as follows: Decorative design, including the following list of studies: Designing for stained glass and decorative painting; metal work, carved wood, and mosaic; tapestry, embroideries, carpets, wall paper, and leather work; posters, book covers, initial letters, and decorative illumination of books; $15 per month. Students of stained glass and decorative painting, using models, $20, four lessons each week. Pyrogravure, burning on wood and leather, $15 per month.

Drawing, painting, and illustrating: Drawing and painting from the costume model in charcoal, oil, pastel, and water color, $15 per month;

portrait in charcoal, oil, pastel, and water color, $15 per month. The class in illustrating includes the following branches of study: Pen drawing (for book, magazine, and newspaper work); wash and gouache drawing; charcoal drawing; water color; pencil drawing; red chalk (sanguine); etching; chalk and crayon drawing; papier gillot (process paper); black and white water color. Tuition $15 per month. Composition (advanced class), $6 per month, free to students who attend any two classes; $2 per month for students who attend one class. The study of costumes of all ages is included in this class.

Scholarships are given for drawing and painting from life, portraiture, water color, decorative design, illustrating, composition, etc., and are awarded on general yearly average and entitle the student to free instruction during the ensuing year. Money prizes and medals are also distributed. A bronze medal and a scholarship are awarded for the finest set of compositions at the end of the year, or a silver medal for best work done in advanced composition class with the assistance of models and accessories, if a sufficiently high standard is reached. The annual cost of maintaining the school is paid from the fees of the students.

Massachusetts School of Design, Boston.

This school is based on the reorganization of the Lowell School of Practical Design which was established in 1872 for the purpose of promoting industrial art in the United States. Then there were practically no designers of patterns for textile fabrics in the United States, and all designs were made and purchased abroad. There was no opportunity in this country of acquiring taste and skill in composition and design with reference to the industrial arts, and it was believed that a school of this kind would result not only in providing a good trade or profession for those whose tastes lay in the direction of art, but would prove to be of great advantage ultimately to the manufacturers by enabling them to get a variety of designs and to get them at a lower cost.

Under the influence of Mr. John A. Lowell this school was established by the Lowell Institute, for which he furnished the funds and of which he was the trustee. The corporation of the Massachusetts Institute of Technology assumed the responsibility of conducting it, and has retained its management according to the purpose and general plan of the school, as proposed by the trustee of the Lowell Institute. The expenses are borne by the Lowell Institute, and tuition is $100 per annum.

The course of study is as follows: Students are taught the art of making patterns for prints, ginghams, delaines, silks, laces, wall papers, book covers, carpets, oilcloths, etc. The course is of three years' duration and embraces: Technical manipulations; copying and variation of designs; original designs and composition of patterns; the making of working drawings and finishing of designs. Lessons are also given in china painting and cast drawing. Instruction is given personally to each student over his work. Students supply their own instruments and materials, the cost of which is about $5 per year. The school is constantly provided with samples of all the novelties in textile fabrics from Paris, such as broadcloth, silks, ribbons, alpacas, armures, and fancy woollen goods.

Massachusetts Normal Art School, Boston.

The legislature, by an act passed May 16, 1870, made instruction in industrial and mechanical drawing obligatory in the public day schools, and required cities and towns containing more than 10,000 inhabitants to make provision for free instruction to persons over 15 years of age. It was soon found impossible to realize satisfactorily the benefits intended by this act, for want of competent teachers. To furnish a supply of teachers, the legislature in 1873 provided for the establishment of a State normal art school, and this school was started in the fall of that year. Its purpose is to train teachers and supervisors of industrial art; but while the majority of its graduates do become teachers, yet so many of them make use of the special qualifications which the training of the school has given them to go into various industrial lines, that some note of the school seems proper in this place.

Candidates for admission must be over 16 years of age, must bring a certificate of moral character, and must present a high-school diploma or its equivalent. Entrance examinations must be passed upon the following subjects: Outline from group of models; outline ornaments from cast; light and shade from objects. Tuition is free to students residing within the State and intending to teach drawing in the public schools. Students from other States who declare their intention to remain in the school until they graduate and after graduation to teach in the public schools of Massachusetts are admitted free; otherwise they must pay a fee of $50 per term. A fee of $5 per term for incidentals is charged. Graduates may continue their studies for one year upon invitation of the principal. Diplomas are awarded to graduates of the several courses, and are of three kinds — a mechanical diploma, a free-hand diploma, and a teacher's diploma. The school is under the management of the State Board of Education and a principal; it has 15 instructors.

There are six classes, outlined as follows:

Class A. — Elementary Drawing. Works required. — Geometric problems and perspective problems, instrumental; model drawing in outline; outline of group of common objects; light and shade drawing from a group of colored objects; details of human figure from cast; details of animal form from cast; details from the historic schools of ornament; botanical drawing in pencil, pen and ink, and with brush; water-color studies from the living plant and flowers; decorative rendering of the same; exercises in design. Examinations for advancement. — Plane geometrical problems; perspective problems; drawing from objects (time sketch); historic ornament and design; theory of model drawing.

Class B. — *Drawing, Painting, Composition, Artistic Anatomy, and Advanced Perspective.* Works required. — Drawing from the antique figure and living model; anatomical details; perspective of shadows, reflection, and aerial effects; study from still life in oil or water color; composition; decorative design. Examinations for advancement. — Time sketch from the antique; time sketch in color from still life; original decorative composition; paper on the historic schools of painting; paper on advanced perspective.

Class C. — *Constructive Arts and Design.* Elementary course (first term). — Orthographic projection; projection of shadows; elements of machine drawing; elements of building construction; examination in each subject. Advanced course (second term) — Works required. — Descriptive geometry: Illustrations from lectures; intersections of solids; projections of shadows. Ship drafting and model. Architecture: Design for dwelling or public building; structural details of same; monograph of architecture and ornament; drawing of buildings from measurements; two designs in accordance with a proposition. Machine drawing: Screws and their application; wheels, spur and bevel gears, cams, etc.; machine drawn from copy; machine drawn from measurements; details of same prepared for shop; shopwork, in wood and iron; forging, making, and tempering tools, etc. Examinations for advancement. — Papers on solid geometry and shadows; examination of shopwork; examination on lectures, notes, and problems; examination in architecture; examinations in building construction; design sketches based upon a proposition; paper on subject selected for monograph.

Class D. — *Modeling, Casting, and Design in the Round.* Works required. — Elementary course: Ornament from the cast; study from the drawing or photograph; study from the living plant; details from the antique figure; details from animal form. Advanced course: Head from life; original design; study from the living model; figure composition. Casting: Cast from nature of fruit or foliage; cast from a piece mold, sulphur mold, and gelatine mold. Examinations for graduation. — Time sketch in clay from ornament; time sketch in clay from the antique; time sketch in clay from life (head); design in the round; paper on sculptured ornament.

Public School Class. Pedagogy; teaching exercises; observations in the public schools; consideration of courses of study; graded illustrative work; blackboard drawing; details of supervision. Examinations for graduation. — Pedagogy; essay on supervision; essay on illustrative work; essay on literature of art.

Special Class. Special class in applied design. — Only students who have performed the work required in classes A, B, and D, or A and C, will be eligible to enter this class.

Lectures. — Class lectures are given each year on the history of art, on design, anatomy, and perspective. A special course of lectures will be given during the first term by members of the faculty. All students are required to attend them.

There are three regular courses of instruction, made up of the work in two or more of the classes above described, as follows: The first course requires four years. It embraces the work of classes A and B and the elementary course of C and D, followed by a year in the public school class. The second course requires four years. It embraces the work of classes A, B, and D, with normal instruction from the teachers of those classes. The third course requires three years. It embraces the work of class A, and the elementary and advanced work of class C, with normal instruction from the teachers of those classes. Students completing the work of class A may choose one or more of the courses offered by the school. The annual cost of maintaining the school is $24,000, paid by the State.

Public Evening Drawing Schools, Boston.

These schools were established under the provisions of a law passed in 1870, providing for the teaching of industrial and mechanical drawing in the public schools of cities and towns of 10,000 inhabitants or more, and are five in number. No person under 15 years of age is admitted. Students are admitted to the first year's course without examination.

The last week of the year's course or term is devoted to examinations in all the classes. Each first year student who has finished the work in his class and passed the required examinations is entitled to a first year diploma, each second year student to a second year diploma, and each third year student who has finished the work of his class and passed the required examinations is entitled to a third year diploma. The work done in the different classes in these schools is entirely industrial in character, and the students, all of whom attend voluntarily, are nearly all workmen in some branch of industry. All of the material used by them is furnished by the city without charge. The proportion of male to female students is about three to one. The total number of instructors is 27.

The courses of instruction follow: *Course in Free-hand Drawing and Design.* — First year. — The first year course in this department is required. The subjects for instruction are pictorial drawing from geometric solids and from still-life objects, from examples of historic ornament as an introduction to decorative design and the principles and practice thereof in its elementary stages, and geometric drawing as an important factor in decoration. Second year. — The second year course is elective. The subjects for instruction are the same as those in the first year, but they are presented in a more advanced form, and with the additional ones of drawing from casts of the human figure, in detail and in full, and the application of decoration to various purposes. Third year. — The third year course is elective. The subjects chosen for instruction are similar to those presented in the second year, with this addition, that students may elect for one or more of their diploma sheets drawing from life, costume models, in place of drawing from casts of the human figure.

The details of the course in free-hand drawing follow: The first work required in this course is called "practice work in time sketching," and is to be done entirely by free-hand methods: First, from single solids; second, from simple groups of models and objects; and third, from more elaborate groups of the same. In selecting models and objects for the above-named exercises and for all following work of this kind, the teacher chooses such as will be most useful in training the power of observation, in teaching the principles of practical perspective and faculty in sketching from natural and manufactured objects such as can be presented in the class room. Throughout the above-named "practice work" as much attention is given to the expression of solidity and color values through the use of shading as seems desirable to the instructor, but some expression of this kind is required of the students before they begin their certificate sheets. All time sketches are preserved by the instructors until the close of the term, and are returned to the students at the same time as their certificate sheets. Students who have completed their work and passed the examinations of one term are entitled to enter the next year classes without further examination; but all those who have not are required to do so before receiving such advancement. Each one is, however, credited with what he has accomplished, and is allowed to finish the rest at the beginning of the following term, and if this be done satisfactorily and within a reasonable time he is then advanced to the next class. Third year students who have not earned their diplomas are also allowed to complete the course at the beginning of the following term.

Course in Instrumental Drawing. — First year. — All students are required to follow the course of instruction given in the first half of the term. The subjects are plane geometry, orthographic projections, intersections of solids, development of surfaces and isometric projections. The second half of the term is elective. The students having the choice between machine and architectural drawing are required to follow the course of instruction they may select. Second year. — The first half of the term is required. The subjects are advanced problems in plane geometry, intersections of solids, development of surfaces, and conic sections. The second half of the term is elective. The subjects of the two electives are machine drawing and architectural drawing. Third year. — In this year the entire work is elective, and the subjects chosen are to be treated in a thoroughly practical way, *i.e.*, as they would be in the office of a machine draftsman or in that of an architect.

The details of the course in instrumental drawing are: First year. — First half of term (required): Two sheets of geometrical problems; two sheets of orthographic projections; one sheet of intersections and developments; one sheet of isometric drawing. Second half of term (elective):

Elective A, machine drawing — a sheet of screws (conventional); five sheets of machinery details in elevation and section. Elective B, architectural drawing — three sheets of structural details; two sheets of plans of a building; one sheet of elevation of a building. Second year — First half of term (required): A sheet of advanced geometric problems; a sheet of orthographic projections; a sheet of advanced intersections and developments; a sheet of conic sections. Second half of term (elective): Elective A, machine drawing — a sheet of screws; a sheet of gears; a sheet of wheels and belts; a sheet of machine drawing. Elective B, architectural drawing — a sheet of structural details; a sheet of plan of two-story building; a sheet of elevation of two-story building; a sheet of framing plan of two-story building. Third year. — Instrumental drawing (elective): Four finished sheets are required from each student in this year's course. Elective A, machine drawing; Elective B, architectural drawing. In both the above-named electives the problems to be worked out by the students should, so far as it is possible, be elected by them, and in arranging their final examinations, the instructors must be governed by the students' class work.

Course in Ship Drafting. In the first year the general methods used in the design and construction of various small craft are taught and illustrated. In the second year, the plan, elevation, and section of a vessel is usually the problem to be worked out, each student having a different problem, according to his desire or need. In the third year more difficult problems of construction are given, to be also worked out in plan, elevation, and section, the distribution of these problems being governed partly by the choice of the students and partly by the instructor's knowledge of their ability.

Modeling in Clay. First year. — Required: The number of works required from each student in this year is six, and are: Ornament in low relief modeled from a flat copy; ornament in relief modeled from a cast (two works); groups of objects in low relief modeled from the round; detail from cast of human figure; original design in relief or intaglio. Second year. — Elective: Students in this year will be required to complete not less than four works. They may, with the advice of the instructor, elect the subjects of these works, and their examinations (held on the last three nights of the term) will, as in the free-hand course, be based upon their class work. Third year. — Elective: Students in this year will be required to complete not less than three works. Their examinations will be arranged in the same way and conducted in the same manner as those for the second-year students. A head and bust from life may be chosen as one of the electives.

Public Evening Drawing School, Lowell.

This school was first opened in 1872. The need which led to the establishment of this and other similar schools in the State was the great lack of trained workmen, men with technical as well as practical knowledge, and the necessity of educating such men, if the manufacturers of this country were not to depend upon foreigners.

This school is managed by a special committee of three members of the city school board. There are 20 instructors in the school, and the courses of instruction are as follows: Architectural drawing, machine drawing, free-hand drawing, modeling, and practical design. The cost of maintaining the school is paid by the city.

This school has been largely instrumental in developing a new industry, namely, that of manufacturing woollen and worsted machinery. Some years ago the Lowell Machine Shop started this industry, previously unknown in the United States, and it is universally admitted that this departure and venture would have been a failure but for the fact that it found among its employés men who had been trained in this school, and who were, on that account, able to take hold and direct the building of the new class of machinery.

Evening Drawing School, American Steel and Wire Company, Worcester.

This school was established in 1892 by the American Steel and Wire Company at its works in Worcester, Mass. (formerly the wire mills of Washburn & Moen), because of the fact that it had become difficult to find competent mechanics, and it was realized that something must be done to educate mechanics so that they would be better able to do their work. Courses of instruction are given in free-hand drawing, mechanical drawing, architectural drawing, and mathematics. The school is held in one of the buildings of the company, and its equipment, consisting principally of drawing tables, materials, etc., cost but little. The annual funds for maintaining the school are furnished by the company.

LAWS RELATING TO CHILD LABOR.

In the following is given a brief summary of the laws affecting child labor. The provisions relating to the educational restrictions are varied and complicated, and can best be ascertained by reference to the statutes of each State. It is deemed advisable in the interest of economy of space to abbreviate them as much as possible here. Many of the States forbid, or permit only under restrictions, occupations dangerous to the life, limb, morals, or health of children, and in some of the States the employment of children in begging, theatrical, and circus exhibitions, occupations requiring the handling of intoxicating liquors, night work, etc., is specifically forbidden. No attempt has been made to note the States regulating the hours of labor of minors where labor is permitted, such regulations being very general.

Alabama. Employment forbidden of children under 12 years in mines and factories; age certificates required. No compulsory educational law.

Alaska. Employment forbidden under 21 years in bar rooms. No compulsory educational law.

Arkansas. Employment forbidden under 14 years in mines, and children under 16 years, unable to read and write, may not be employed in mines. No compulsory educational law.

California. Employment forbidden under 12 years in any factory, workshop, or mercantile establishment; certificate of age required when child is under 16 years.

Colorado. Employment forbidden for children under 14 years in any underground works or mine, smelter, mill or factory; boys under 12 years, in coal mines; no girl may be employed in coal mines. Children under 14 years may not be employed in any business during school hours unless they have attended school 12 weeks during the year; under 16, unable to read and write, may not be employed in mines.

Connecticut. Employment forbidden under 14 years in any mechanical, mercantile, or manufacturing establishment. Children under 14 years must have attended day school a prescribed period; between 14 and 16 years, provisions similar to Maine and Massachusetts.

Florida. Children under 15 years may not be employed more than 60 days without consent of legal guardian. No compulsory educational law.

Idaho. Employment forbidden, by constitution of State, under 14 years in mines. Compulsory school attendance between eight and 14 years, 12 weeks each year, eight weeks to be consecutive.

Illinois. Employment forbidden under 14 years in any mercantile institution, store, office, laundry, manufacturing establishment, factory, workshop, or mine; age and school certificates required. Girls may not work in mines at any age. Certificate of age required when under 16 years, to contain name, place, and date of birth of child.* Children under 16 may not be employed at certain occupations endangering life or health.

Indiana. Employment forbidden under 14 years in any manufacturing or mercantile establishment, mine, quarry, laundry, renovating works, bakery, or printing office. Certificate of age required when under 16 years. Children under 16, unable to read and write in English, may not be employed in foregoing employments except in vacation of public schools.

Iowa. Employment forbidden of boys under 12 years in mines. No compulsory educational law.

Kansas. Employment forbidden under 12 years in coal mines; children under 16 years unable to read and write may not be employed in mines, and must have attended school three months in the year.

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* In New York, Massachusetts, and some other States, a statement of school attendance, personal description of the child, and other data, are required.

Kentucky. Employment forbidden under 14 years in any workshop, factory, or mine, without written consent of parent and county judge under penalty of $25 to $250.

Louisiana. Employment forbidden of boys under 12 years and girls under 14 in any factory, warehouse, or workshop. Children under 14 must not be employed in foregoing employments, or in clothing, dressmaking, or millinery establishments, nor by itinerant musicians, unless they have attended school four months in the preceding year; no other compulsory educational requirement.

Maine. Employment forbidden under 12 years in any manufacturing or mercantile establishment. Certificate of age required under 16; under 15, this certificate must state school attendance. Children under 15 shall not be employed in any manufacturing or mercantile establishment, except during school vacation, unless they have attended school 16 weeks during preceding year; such school attendance must continue during employment.

Maryland. Employment forbidden under 14 years in mills and factories, except canning establishments, unless self, widowed mother, or invalid father solely dependent upon such employment. (This provision is that of the compulsory attendance act of 1902; operation is limited to the city of Baltimore and the county of Allegany; 19 counties are exempt from the law.) No minor between 12 and 16, unable to read and write English, may be employed where there is an evening school unless attending that or another school.

Massachusetts. Employment forbidden under 14 years in factories, workshops, or mercantile establishments; under 14, in any other employment for wages during school hours. Certificate of age and schooling required under 16 years. Children over or under 14 years, who cannot read and write English, shall not be employed where there is an evening school unless they attend the same, or a day school.

Michigan. Employment forbidden under 14 years in manufacturing establishments, hotels, or stores. Certificate of age required when under 16 years. (Law does not apply to canning or evaporating works.) Children under 16, unable to read and write, may not be employed in manufacturing establishments.

Minnesota. Employment forbidden under 14 years in factories, workshops, or mines; under 14 years, in mercantile establishments, telegraph, telephone, or public messenger companies, except during vacation of public schools; under 16 years, in any occupation dangerous to life, limb, health, or morals. Children under school age (16 years) may not be employed in any occupation unless they have attended school the prescribed period; under 16, unable to read and write English, may not be employed in any indoor occupation (except in vacation) unless attending day or evening school.

Mississippi. Employment forbidden of boys under 21 and girls under 18, away from home without consent of legal guardian. No compulsory educational law.

Missouri. Employment forbidden under 14 years in manufacturing or mechanical establishments, or where work would be dangerous to health of child. No compulsory educational law.

Montana. Employment forbidden under 14 years in mines.

Nebraska. Employment forbidden under 10 years in manufacturing, mechanical, industrial, or mercantile establishments. Children in foregoing employments shall not be employed under 14 years of age, except during vacation of the public schools, unless they have attended school 20 weeks during preceding year; school certificates required. Certificates of age required when under 16 years.

New Hampshire. Employment forbidden under 12 years in any manufacturing establishment. No child may be engaged under 14 years in any employment during school hours; under 16, in any employment if unable to read and write English. No minor unable to read and write English may be employed unless attending day or evening school.

New Jersey. Employment forbidden of children under 14 years in factories, workshops, mines, or establishments where the manufacture of any goods whatever is carried on.

New York. Employment forbidden under 14 years in factories and in mercantile establishments. Certificates of age, school attendance, health, etc., required between the ages of 14 and 16 years. Children under 16 who cannot read and write English shall not be employed where there is an evening school, unless they attend the same or a day school.

North Carolina. Employment forbidden under 12 years in any factory or manufacturing establishment within the State except in oyster canning and packing manufactories. No compulsory educational law.

North Dakota. Employment forbidden, by constitution of State, under 12 years in mines, factories, and workshops. Children under 14 may not be employed in any manner unless they have attended school 12 weeks during the year.

Ohio. Employment forbidden under 14 years in factories, shops, mercantile, or other establishments; under 15 years, in mines. No child under 14 may be employed during school hours without a certificate of having completed the legal studies; or between 14 and 16 if unable to read and write English.

Oregon. Employment forbidden under 14 years in any factory, store, or workshop, in or about any mine, or in the telegraph, telephone, or public messenger service; nor in any capacity for wages during the hours when public schools are in session. Children under 16 prohibited from employment, if unable to read and write English. School attendance compulsory for entire school term for children under 14 years.

Pennsylvania. Employment forbidden under 13 years in factories, manufacturing, or mercantile industries, laundries, workshops, renovating works, or printing offices; under 16, in mines; under 14, in or about outside workings of a colliery; girls may not work in mines. Certificate of age required under 16 years; children under 16 may not be employed in foregoing or other industrial establishments unless they can read and write English, or have attended school 16 weeks in preceding year.

Rhode Island. Employment forbidden under 12 years in factories, manufacturing, or mercantile establishments. Certificate of age required when under 15 years. Children under 13 years may not be employed except during school vacation.

South Carolina. After May 1, 1903, employment forbidden under 10 years of age in any factory or textile establishment; after May 1, 1904, employment forbidden under 11 years of age in mills; after May 1, 1905, employment forbidden under 12 years of age in factories. After May 1, 1903, employment forbidden under 12 years of age in factories between the hours of 8 P.M. and 6 A.M.; *except* in the case of children of a widowed mother or totally disabled father, dependent upon their own labor for support. Orphaned children dependent upon themselves for support may be permitted to work in mills when under 12 years of age; sworn affidavits must be made by guardian as to the facts. No compulsory educational law.

South Dakota. Employment forbidden under 14 years in mines. Children under 14 may not be employed in any manner during school hours, unless they have attended school 12 weeks during the year.

Tennessee. Employment forbidden under 14 years in workshops, mills, factories, or mines. No compulsory educational law.

Utah. Employment forbidden, by constitution of State, under 14 years in mines. Girls may not work in mines.

Vermont. Employment forbidden under 10 years in manufacturing or mechanical establishments. Children under 14 shall not be employed in the foregoing except during vacation, unless they have attended school 16 weeks during preceding year, and if unable to read and write English, shall not be employed where there is an evening school, unless they attend the same, or a day school.

Virginia. Employment forbidden under 12 years in factories.

Washington. Employment forbidden under 14 years in mines; girls may not work in mines. Children under 15 may not be employed in manufacturing, mechanical, or mercantile establishments, or by telegraph or telephone companies (except in vacation) unless they have attended school a prescribed period the previous year, or have attained reasonable proficiency in common branches.

West Virginia. Employment forbidden under 12 years in mines, factories, workshops, manufactories, or establishments where goods or wares are manufactured.

Wisconsin. Employment forbidden under 14 years in mines, factories, or workshops, bowling alleys, or bar rooms; under 14 years in mercantile establishments, laundries, or in telegraph, telephone, or public messenger service, except in vacation of public schools. Certificate of age required when under 16 years (but county judge, commissioner of labor, factory or assistant factory inspector, may exempt any child over 12 from this act where labor is necessary to support).

Wyoming. Employment forbidden, by constitution of State, under 14 years; girls may not work in mines.

United States (laws for territories). Employment forbidden under 12 years in the underground workings of any mine.

REVIEW OF EMPLOYMENT AND EARNINGS.

SIX MONTHS ENDING APRIL 30, 1903.

The following review presents, by industries, a summary of the conditions affecting employment and earnings for the six months ending April 30, based upon special reports and comparisons made by agents of the Bureau relating to the principal industrial centres of the Commonwealth. As an indication of the general employment of labor, it has been reported that there is absolutely no farm labor to be had at the intelligence offices which are the resort of large numbers of all classes of workmen in dull times.

Boots and Shoes. Fall demand in the boot and shoe industry kept up late. Present situation better than for previous six months and better than corresponding period in 1902. Greater demand for better grade of shoes. Foreign market no better. Difficulty in obtaining help. Unsettled labor conditions in Lynn and Haverhill due to prevailing strike. Factories are being run on full time and to about 75 per cent of full capacity; rate of wages remains the same, although individual concessions are noted; cost of stock generally is higher; selling prices are about the same as at the time of our last review, but increases are reported on some grades; collections, on the whole, fair. Favorable outlook.

The shipment of shoes from Brockton for the six months ending April 11, 1903, aggregates 300,079 cases, as compared with 292,026 cases for the previous six months, and 330,774 cases for the six months ending April 12, 1902. The number of cases shipped from Haverhill for the six months ending April 10, 1903, was 251,192 as against 226,847 cases for the previous six months, and 235,983 for the six months ending April 11, 1902.

Connected with the boot and shoe industry, we review *Soles, Heels, and Cut Stock.* Conditions in shoe findings remain about the same. Establishments running on full time to about 50 per cent of full capacity; rate of wage and selling prices remain the same; cost of stock has increased, while collections are good.

Building. Spring activity started in as early as usual but not as great as in corresponding season in 1902. Operations seem confined mostly to mercantile buildings, there being little residential work, but much repair and alteration work. Very little speculative building. Tendency to withhold contracts on account of the unsettled labor conditions and cost of material; also pending outcome of demand of carpenters for $3 per day May 1. Rate of wages remains practically the same; granite cutters received increase from 35 to 37½ cents per hour; some other branches of the building trades expect increases to become operative May 1. Cost of stock generally is higher. Competition keen. Outlook good.

Clothing. Spring trade opened with increased activity as compared with previous six months and with corresponding six months in 1902. Establishments running on full time, being worked from 50 per cent to full capacity. Rate of wages the same; cost of stock increased, especially woollen cloth; selling prices practically the same; collections fair. Prospects favorable for good summer trade.

Cotton Goods. In general, demand in the cotton goods industry fully as good as a year ago with increased volume of business in some cases. Most plants ran to full capacity throughout the winter months and outlook good. Fine grades of cloth active, but selling prices low; increased cost of raw materials has depressed the market. No labor troubles reported except in Lowell where six of the corporations have shut down on account of strike. Establishments running up to full capacity with rates of wages the same except in individual cases. Cost of stock has increased, raw cotton is 1⅛ cents per pound higher than at same time in 1902. Print cloths are about ⅛ cents under last year's market. Selling prices about the same, cotton yarns are selling about one cent higher than at corresponding date in 1902; collections fair.

Leather. Spring demand in sheep and calf leather better than corresponding season in 1902. Foreign market active. Demand for patent and enamelled leather constantly increasing. Rainy weather has had bad effect upon the leather industry. Indications of labor troubles. Good help scarce. Establishments are running on full time and to about 85 per cent of full capacity; rate of wages about the same; cost of stock slightly higher; selling prices practically the same; collections good. Outlook favorable.

Liquors (Bottled) and Carbonated Beverages. In temperance drinks, normal fall and winter business reported, but demand for the spring trade slow, due to unfavorable weather. Conditions practically the same as a year ago; establishments are running to about one-half full capacity.

Liquors: Malt. In the brewing industry, indications point to a very good season. Wage conditions same as in fall, with breweries running on full time. The general strike in this industry in the spring of 1902 renders that season useless for comparison with the corresponding season in 1903. Breweries are being run to about 55 per cent of full capacity; rate of wages the same; in cost of stock, hops range from 50 to 60 per cent higher, malt three cents per bushel less, and cerealin lower; selling prices remain about the same; collections fair. The following statement shows the comparative production of malt liquors in Massachusetts, by months, for the period under consideration: October, 1902, 149,539 barrels; November, 132,074 barrels; December, 131,852 barrels; January, 1903, 114,407 barrels; February, 111,280 barrels; March, 142,448 barrels; aggregate number of barrels brewed for the six months specified was 781,600 as against 835,038 barrels brewed during the corresponding period in 1901 and 1902.

Machines and Machinery. Business situation better than a year ago and fully as good as for the previous six months. Temporary dullness in some quarters, but generally plenty of orders on hand. Machine shops running full time and up to about 80 per cent of full capacity; rates of wages are the same; cost of stock and selling prices have increased; collections good.

Metals and Metallic Goods. In metals and metallic goods, prospects are promising for a good spring and summer business. The situation is fully up to the level of a year ago and compares favorably with the previous six months. Unsettled labor conditions have somewhat affected the demand. Establishments are running on full time and up to about 80 per cent of full capacity; rate of wages the same as at last report; cost of stock generally increased; selling prices slightly increased; collections fair.

Musical Instruments and Materials. In this industry, business remains about the same as at our last report. Establishments running full time and from 75 per cent to full capacity; rate of wages the same, but the nine-hour day became operative in one establishment Jan. 1; cost of stock and selling prices have increased; collections fair.

Paper. In the paper industry, demand is reported excellent at present; business kept up well through the winter and spring. Establishments running on full time and up to full capacity; rate of wages the same, — demand has been made for an increase varying from 20 to 30 per cent, to go into operation May 1; cost of stock remains about the same, although slightly higher on some grades; selling prices firm; collections good. Outlook good.

Printing, Publishing, and Bookbinding. In this industry, demand was good throughout the winter and at present is considered extremely satisfactory, and, on the whole, fully as good as the corresponding season in 1902. Overtime work being done in some departments. Competition close. Establishments running on full time and up to about 85 per cent of full capacity; rate of wages the same, except that night operators received an increase of three cents per hour April 17; cost of stock has increased slightly — ledger by five per cent and book stock by ⅛ to ¼ of a cent per pound; selling prices practically the same; collections good.

Print Works, Dye Works, and Bleacheries. Business is reported good. Establishments are running on full time and up to full capacity; rate of wages remains the same; cost of stock higher.

Woollen Goods. Activity in the woollen goods industry compares favorably with the situation at the corresponding period in 1902. Demand is especially brisk for satinets. Establishments are running on full time and nearly up to full capacity; rate of wages the same; cost of stock has increased; selling prices slightly higher; woollen yarns average nine cents per pound higher for domestics than a year ago; collections fair.

Worsted Goods. Conditions in the worsted goods industry are fully as favorable as a year ago, with gradual increase in business reported since October. One establishment reports larger number employed than ever before. Establishments are running on full time and from 80 per cent to full capacity; rate of wages and cost of stock the same as at our last report; selling prices slightly higher; collections fair.

A summary of employment and earnings, by industries, follows:

INDUSTRIES.	NUMBER OF PERSONS EMPLOYED FOR WEEK ENDING —		WEEKLY PAY-ROLL FOR WEEK ENDING —		PERCENTAGES OF INCREASE (+), OR DECREASE (—), FOR THE WEEK ENDING APRIL 11, 1903, AS COMPARED WITH WEEK ENDING OCT. 11, 1902, FOR —		
	Oct. 11, 1902	April 11, 1903	Oct. 11, 1902	April 11, 1903	Persons Employed	Weekly Earnings	Weekly Earnings per Individual
Boots and shoes,	4,752	4,864	$49,699	$52,684	+2.36	+6.01	+3.54
Soles, heels, and cut stock,	91	87	671	571	—4.40	—14.90	—10.99
Building,	1,982	1,394	27,205	19,707	—29.67	—27.56	+2.99
Clothing,	781	837	8,071	8,320	+7.17	+3.09	—3.78
Cotton goods,	19,390	19,861	156,190	158,515	+2.43	+1.49	—0.99
Leather,	2,649	2,927	25,090	28,930	+10.49	+15.30	+4.33
Liquors (bottled) and carbonated beverages,	10	12	107	125	+20.00	+16.82	—2.62
Liquors: malt,	710	493	11,256	7,939	—30.56	—29.47	+1.58
Machines and machinery,	6,444	6,419	70,233	71,318	—0.39	+1.54	+1.93
Metals and metallic goods,	6,143	6,725	71,229	81,231	+9.47	+14.04	+4.14
Musical instruments and materials,	280	269	4,357	3,803	—3.93	—12.72	—9.13
Paper,	1,832	1,863	16,792	16,453	+1.69	—2.02	—3.60
Printing, publishing, and bookbinding,	661	673	7,695	8,368	+1.82	+8.75	+6.79
Print works, dye works, and bleacheries,	945	945	8,622	8,549	=	—0.85	—0.77
Woollen goods,	9,003	8,784	71,769	69,535	—2.43	—3.11	—0.63
Worsted goods,	8,684	9,129	73,603	74,074	+5.12	+0.64	—4.36
TOTALS,	64,357	65,282	$602,589	$610,122	+1.44	+1.25	—0.11

The foregoing table shows, for industries considered, employment and earnings for the two weeks under consideration (those ending Oct. 11, 1902, and April 11, 1903) as well as the percentages of increase or decrease in the total number of persons employed, total weekly earnings, and the weekly earnings per individual. The statistics of persons employed and earnings are based upon comparisons of identical establishments.

The following industries show increases in the number of persons employed for the week ending April 11, 1903, as compared with that ending Oct. 11, 1902: Boots and Shoes; Clothing; Cotton Goods; Leather; Liquors (Bottled) and Carbonated Beverages; Metals and Metallic Goods; Paper; Printing, Publishing, and Bookbinding; and Worsted Goods. The following industries show a decrease: Soles, Heels, and Cut Stock; Building; Liquors: Malt; Machines and Machinery; Musical Instruments and Materials, and Woollen Goods. Increases are reported in the weekly payroll for the following industries: Boots and Shoes; Clothing; Cotton Goods; Leather; Liquors (Bottled) and Carbonated Beverages; Machines and Machinery; Metals and Metallic Goods; Printing, Publishing, and Bookbinding; and Worsted Goods. Decreases are shown in the following: Soles, Heels, and Cut Stock; Building; Liquors: Malt; Musical Instruments and Materials; Paper; Print Works, Dye Works, and Bleacheries; and Woollen Goods. The greatest change in weekly earnings per individual is seen in Soles, Heels, and Cut Stock. The next greatest in Musical Instruments and Materials, which shows a decline of 9.13 per cent. Increases in the individual weekly earnings were reported in the following industries: Boots and Shoes; Building; Leather; Liquors: Malt; Machines and Machinery; Metals and Metallic Goods; and Printing, Publishing, and Bookbinding. Decreases in individual weekly earnings are shown in the following: Soles, Heels, and Cut Stock; Clothing; Cotton Goods; Liquors (Bottled) and Carbonated Beverages; Musical Instruments and Materials; Paper; Print Works, Dye Works, and Bleacheries; Woollen Goods; and Worsted Goods.

The aggregate number of persons employed in the establishments under consideration for the week ending April 11, 1903, was 65,282 as against 64,357 for the week ending Oct. 11, 1902, an increase of 925, or 1.44 per cent. The aggregate weekly payroll was $610,122 as against $602,589, an increase of $7,533, or 1.25 per cent. In the aggregate, the individual weekly earnings for the week ending April 11, 1903, show a loss of one cent, or 0.11 per cent, as compared with the individual weekly earnings reported for the week ending Oct. 11, 1902.

The next table shows the same facts regarding employment and earnings, by cities.

CITIES AND TOWNS.	NUMBER OF PERSONS EMPLOYED FOR WEEK ENDING—		WEEKLY PAY-ROLL FOR WEEK ENDING—		PERCENTAGES OF INCREASE (+), OR DECREASE (—), FOR THE WEEK ENDING APRIL 11, 1903, AS COMPARED WITH THAT ENDING OCT. 11, 1902, FOR—		
	Oct. 11, 1902	April 11, 1903	Oct. 11, 1902	April 11, 1903	Persons Employed	Weekly Earnings	Weekly Earnings per Individual
Boston,	5,924	5,698	$75,245	$71,003	—3.81	—5.64	—1.89
Brockton,	972	858	9,266	10,223	—11.73	+10.33	+24.97
Cambridge,	570	478	6,574	5,811	—16.14	—11.61	+5.46
Chicopee,	3,082	3,057	19,792	19,798	—0.81	+0.03	+0.93
Fall River,	4,943	4,950	42,381	41,414	+0.14	—2.28	—2.33
Haverhill,	1,896	2,004	19,224	20,566	+5.70	+6.98	+1.18
Holyoke,	7,424	7,668	63,294	64,064	+3.29	+1.22	—2.11
Lawrence,	19,278	19,295	155,797	153,083	+0.09	—1.74	—1.86
Lowell,	3,857	4,036	32,024	34,449	+4.64	+7.57	+2.89
Lynn,	2,382	2,495	25,472	26,312	+4.74	+3.30	—1.31
New Bedford,	3,178	3,490	30,416	31,815	+9.82	+4.60	—4.70
Peabody,	1,493	1,626	14,991	16,766	+8.91	+11.84	+2.69
Woburn,	1,116	1,223	10,947	12,325	+9.59	+12.59	+2.75
Worcester,	8,242	8,404	97,166	102,493	+1.97	+5.48	+3.48
TOTALS,	64,357	65,282	$602,589	$610,122	+1.44	+1.25	—0.11

It will be seen that a greater number of persons were employed for the week ending April 11, 1903, than for that ending October 11, 1902, in all the cities except Boston, Brockton, Cambridge, and Chicopee. Increased earnings are also shown in all the cities except Boston, Cambridge, Fall River, and Lawrence. The weekly earnings per individual show an increase in Brockton, Cambridge, Chicopee, Haverhill, Lowell, Peabody, Woburn, and Worcester, and a decrease in Boston, Fall River, Holyoke, Lawrence, Lynn, and New Bedford.

QUARTERLY RECORD OF STRIKES.

The number of industrial disputes occurring in Massachusetts during the first quarter of 1903 was 67, by months as follows: January, 22; February, 20; March, 25. There were several instances of general strikes involving from two to nine factories. These have in each case been considered as one disturbance. There was nothing unusual in the labor situation during the quarter under consideration except the general feeling of unrest, which culminated in many strikes on April 1, and again on May 1.

This quarter was marked by the inauguration of one of the greatest textile strikes that has taken place in Massachusetts in years. On March 30, the cotton operatives of six of the largest corporations in Lowell, to the number of about 18,000, were forced into idleness on account of the strike of loom-fixers for 10 per cent increase in wages. Mill agents subsequently posted notices of an indefinite shutdown. All attempts towards settlement of strike have proved futile, and a long contest is looked for.

The unsettled condition of the boot and shoe industry was a noticeable feature in labor circles, this being particularly true in Lynn and Haverhill, two of our largest shoe manufacturing centres. The labor differences were much more numerous than those reported for the preceding quarter, yet were fewer by 15 than those occurring during the corresponding quarter in 1902. Three of the disturbances partook of the nature of a lockout.

The causes and results of the disputes may be seen in the following summary:

CAUSES.	RESULTS OF STRIKES					Total Strikes
	Succeeded	Compromised	Failed	Pending	Not Stated	
Wages,	5	6	11	3	5	30
Hours,	1	1	-	-	2	4
Hours and wages,	3	-	1	-	3	7
Hours, wages, and recognition of union,	1	-	1	-	-	2
Against discharge of men,	1	-	4	-	-	5
Disagreement between unions,	-	-	-	3	-	3
Other causes,	3	5	3	-	5	16
TOTALS,	14	12	20	6	15	67

It will be seen from the above table that the question of wages entered into 39 strikes, or nearly 60 per cent of the whole number.

The cities and towns where the strikes took place, together with the number of disputes occurring in each, follow: Boston, 11; Brockton, 7; Pittsfield and Worcester, 5 each; Haverhill and Lynn, 4 each; Framingham, 3; Fall River, Fitchburg, Lowell, Maynard, New Bedford, and Somerville, 2 each; and the following, one each: Adams, Amesbury, Bridgewater, Chelsea, Chicopee, Holyoke, Gardner, Northampton, Peabody, Quincy, Rockland, Spencer, Springfield, Uxbridge, Watertown, West Springfield, and Winchester.

The class of workmen and industry involved, with the number of disputes in each case, follows: Boot and shoe operatives, 16; cotton goods operatives, 10; building trades employés, 9; clothing employés, 7; metal workers, 5; woollen goods operatives, 4; woodworkers, printers, machinists, and granite cutters, 2 each; carriage and wagon workers, carpet operatives, ship builders, box makers, basket weavers, bakers, freight handlers, and leather employés, one each. The boot and shoe industry had by far the largest number of disputes, but they were generally of minor importance, as may be seen from the fact that in seven strikes the time lost aggregated 1,200 days.

In 42 instances the strikes were either ordered by labor organizations, or the strikers were members of some union, while 25 strikes were waged independent of trades unions.

Considering the duration of the strikes and the number of strikers involved, we find that in nine cases, involving about 300 strikers, places were filled; in six strikes, involving 1,083 strikers, disturbances were pending at the close of the period; in three cases, involving 216 strikers, the disputes lasted one day or less; in seven cases, involving 267 strikers, two days; in three cases, 96 strikers, three days; in one case, 42 strikers, four days; in two cases, 36 strikers, five days; in seven cases, 470 strikers, one week; in three cases, 57 strikers, two weeks; in three cases, 422 strikers, three weeks; in three cases, 340 strikers, one month; in two cases, 22 strikers, six weeks; in one case, 600 strikers, three months. The total number of workmen involved in 35 of the strikes was about 2,600, while the working time lost aggregated about 68,900 days.

The most important strikes occurring during the quarter were those of the cotton operatives in Lowell, the carriage and wagon workers at Amesbury, the boot and shoe operatives in Lynn and Haverhill, and the weavers in Fitchburg.

As the strike of the Lowell cotton mill operatives did not occur until the close of our record (quarter ending March 31), we will not consider it in detail here but will treat the dispute *in extenso* in the August Bulletin.

On January 1, about 600 carriage and wagon workers employed by carriage manufacturers in Amesbury struck for nine-hour day with 10 hours' pay, overtime pay, and recognition of union. As a few men could be obtained, the shops were not shut down; in fact, within a month some of the strikers had returned to work. On March 31, Carriage and Wagon Workers' Union No. 27 voted to declare the strike off, and, on April 1, men returned to work under old conditions, nothing having been gained by the cessation of work for three months.

About 300 weavers employed at the Parkhill Manufacturing Co., Fitchburg, struck on March 17 to enforce demand for increase in wages (20 cents per cut). Company offered compromise of five cents per cut increase, but this was not accepted. Power was shut off on March 19, and on April 8 the weavers in Mill C struck in sympathy, making about 1,100 operatives idle in the whole plant. Parties were brought together by the State Board of Conciliation, and an agreement drawn up which was finally accepted on April 15, the weavers returning to work upon an advance of five cents per cut on one of three classes of cloth.

RECENT LEGAL LABOR DECISIONS.

Law Limiting Hours of Labor. The Supreme Court of Wisconsin held, in the case of Wenham *v.* The State, that a statute limiting the hours of work in certain employments does not infringe the constitutional rights of either employer or employé.

Discharging Employé — Labor Union. The Supreme Court of Wisconsin held, in the case of Zillmer *v.* Kreutzberg, that a statute forbidding an employer, under penalty, to discharge an employé because he is a member of a labor organization violates constitutional guarantees of liberty.

Purchase — Installment — Arrest. Justice Blanchard, sitting in the New York Supreme Court, has, in the matter of Arena, held constitutional the law passed lately by the New York legislature prohibiting the arrest and imprisonment of a debtor for less than $100 who had purchased goods on the installment plan.

Contract — Employment — Salary. The Supreme Court of Georgia held, in the recent case of Davis *et al. v.* Morgan, that where a contract of employment is made for one year at a stipulated salary per month, an agreement during the term to receive less or to pay more than the contract price is void unless supported by some changes in place, hours, character of employment or other consideration.

Exemption — Earnings — Personal Services. The Supreme Court of Utah held, in the recent case of Kirkman *v.* Bird, that a statute exempting to married men or heads of families their earnings for personal services rendered within sixty days next preceding the levy of execution by garnishment or otherwise was reasonable, and directed to the remedy and not the right, and was not an unconstitutional impairment of the obligation of contracts entered into prior to its passage.

Injunction — Labor Organization. The Appellate Division of the New York Supreme Court for the First Department held, in the recent case of Beattie *v.* Callanan *et at.*, that an injunction would lie against a labor organization and its officers to prevent interference with the plaintiff's business by inducing parties under contract with him to break the same through threats of ordering or inducing their employés to strike, it appearing that the reasons for the hostile course against the plaintiff were that he refused to recognize the association in a formal way and had offered an alleged affront to the walking delegate.

Employé — "Laborer" — Contract. Where a contract of employment contemplates work, the doing of which depends mainly upon the mere physical power of the employé to do ordinary manual labor, the person so employed is a "laborer" within the meaning of the statute of Georgia exempting from the process of garnishment the wages of journeymen, mechanics and day laborers, and the mere fact that such an employé has the control and management of coemployés engaged in similar work would not deprive him of the exemption allowed by the statute. So held by the Supreme Court of Georgia in the case of Stothart *v.* Melton.

Minor Employé — Accident — Negligence. The New York Court of Appeals held, in the recent case of Marino *v.* Lehmaier, that, under the provisions of the labor law of that state forbidding the employment of a child under fourteen years of age in a factory, an employer who put a child only thirteen years and three months old at work on a printing press, where he was injured, was liable for the injury in a civil action, although no affirmative act of negligence or wrong other than a violation of the statute was shown on the part of the employer, and that the child could not as matter of law be chargeable with contributory negligence or with having assumed the risk of the employment.

Laborer's Lien — Logs — Reservation. The Supreme Court of Minnesota held, in the case of The Commonwealth Lumber Company *v.* Rowley, which arose out of an action to foreclose a laborer's lien, claimed under the provisions of chapter 42 of the General Laws of 1899, for labor performed in cutting and banking certain pine logs on the White Earth Indian reservation under contract with a representative of the general government, that at the time the labor of cutting and banking such logs was performed the same belonged to the government of the United States, and that no lien could attach thereto, and that the appellees having acquired title to the logs subsequent to the performance of such labor, they received the same free and clear of the plaintiff's asserted lien.

Stockholder's Liability — Interstate Law. Where a suit was brought to enforce the liability of stockholders under the law of Minnesota against a resident of Wisconsin, who owned a number of shares of stock in a Minnesota bank which failed, the Supreme Court of Wisconsin held that a receiver appointed in Minnesota under the laws of that state could not maintain an action outside of that state to enforce liability. The case was brought up to the Supreme Court of the United States, but that tribunal held (Finney *v.* Guy) that it could not review the action of the Wisconsin court, no federal question being involved, adding: "Whether, aside from the federal question, the Wisconsin court should have permitted this action to be maintained because of the principle of comity between the states is a question exclusively for the courts of that state to decide."

Minimum Wage Law Unconstitutional. The Supreme Court of Indiana held, in the recent case of Street *v.* Varney Electrical Supply Company, that the act of March 9, 1901, fixing a minimum wage for unskilled labor on public work was unconstitutional. This law provided that unskilled laborers employed on all work done for counties, cities and towns should be paid not less than 20 cents an hour. The court held that the act constituted class legislation and interfered with the liberty of contract, saying, among other things, that no sufficient reason had been assigned why the wages of the unskilled laborer should be fixed by law and maintained at an unalterable rate regardless of their actual value, and that all other laborers should be left to secure to themselves such compensation for their work as the conditions of supply and demand, competition, personal qualities, energy, skill and experience might enable them to do.

Bankruptcy — Wages — Priority. The United States Circuit Court of Appeals for the Second Circuit held, in The Matter of Slomka *et al.*, reported in the New York *Law Journal*, that under the bankruptcy act priority of payment of debts for wages of employés of the bankrupt can be allowed only as to wages earned within three months before the commencement of the bankruptcy proceedings, and that where a general assignment for the benefit of creditors was made under a state statute granting preference to wages earned within a year before the execution of the assignment, which assignment was avoided and superseded by a bankruptcy proceeding, priority could not be allowed as to wages earned more than three months before the commencement of the latter proceeding, as the same did not constitute "debts owing to any person who by the laws of the state * * * is entitled to priority" within the meaning of clause 5 of section 64 of the bankruptcy act.

Railroad — Regulation — Passengers. The Supreme Court of Georgia held, in the recent case of The Central of Georgia Railway Company *v.* Motes, that whether a regulation adopted and sought to be enforced by a carrier of passengers is or is not reasonable is a question of law and not one of fact for determination by a jury; that in the absence of any duty devolving upon a railway company to provide at its stations a place wherein its patrons may sleep while awaiting the arrival or departure of trains, a regulation forbidding passengers from going to sleep in its waiting rooms or lying down on the benches therein is not in a legal sense unreasonable, and that a passenger who displays a persistent determination to disregard such a regulation, and by his wrongful conduct so exasperates an employé of the company as to unfit him for properly performing the duty he owes to his employer with respect to his treatment of his patrons, cannot justly complain that the company's employé lost his temper and resorted to unnecessary force in compelling an observance of the regulation on the part of the passenger.

Master and Servant. Discharge. The Supreme Court of Minnesota held, in the recent case of Von Heyne *v.* Tompkins, that where the relation of master and servant exists between parties certain duties are cast upon the servant which he is bound to fulfill and discharge, the principal one being that of obedience to all reasonable orders of the master not inconsistent with the contract; that disobedience of reasonable orders justifies a rescission by the master of the contract of employment and the peremptory discharge of the servant, and that where a contract for service is an entire one and not severable, and a servant is lawfully discharged for disobedience of the reasonable orders of the master, he is not entitled to recover for his services. The court further held that the motives which actuate a master in discharging a servant are wholly immaterial, the act being justified if any legal ground therefor existed at the time, and it is also immaterial whether or not all the grounds were known to the master when discharging the servant. Nor is it necessary for the master to assign a reason for the discharge, and should he assign one he is not bound by it, nor is he estopped to rely upon some other or different reason or cause, whether known to him at the time of the discharge or not.

Building Association — Stockholder. In the case of Manheimer *v.* Henderson Building & Loan Association's Assignee, recently decided by the Kentucky Court of Appeals. it appeared that the appellee made a deed of Assignment for the benefit of its creditors and the assignee instituted proceedings for a settlement of the trust. Prior to the assignment the appellant, a stockholder, had paid all indebtedness on the stock, had reduced her claim against the association to judgment and filed the judgment with the commissioner, who reported it as a claim on an equal footing with those of other stockholders. The appellant filed exceptions to the report, contending that her claim should be allowed as a preferred claim. The Court of Appeals affirmed the judgment of the court below, overruling the appellant's exceptions. The court held that a stockholder in an insolvent building and loan association is not entitled to credit for stock payments made, or to the withdrawal value of the stock where the same remains with the company unsettled at the time the company becomes insolvent; that the uniform rule is that after the assignment of a building and loan association all stockholders are upon an equal footing; that the fact that the appellant paid in advance all premiums and dues assessed upon her stock or that she gave notice of withdrawal before the assignment could not alter the relationship of the parties as fixed by law, and that the fact that her claim had been merged in a judgment could not change her status as a stockholder or give her preference over other stockholders.

Eight Hour Law Void. The Court of Appeals of New York declared unconstitutional the eight-hour provision of the penal code (subdivision 1 of section 384, H), in the case of the People *v.* the Orange County Road Construction Company, reversing the decision of the appellate division, second department, and sustaining that of Judge Beattie of the Orange county court, who ordered the discharge of the defendant company, upon its demurrer alleging that the law was unconstitutional.

The law, which is a complement of the eight-hour law provision of the labor law, passed at the same session of 1899, made it a misdemeanor for any person or corporation, contracting with the state or with a municipal corporation, to require more than eight hours work for a day's labor.

The defendant corporation was engaged in road construction for the county of Orange, and criminal proceedings were instituted in behalf of the people for its infringement. The defendant entered a demurrer, asserting that the law was unconstitutional This demurrer was sustained by Judge Beattie, but overruled by the appellate division, from whose decision the defendant appealed.

Judge Cullen's opinion, in which the whole court concurs, holds that the law is not a proper exercise of the police power of the state, but unduly discriminates between different classes of contractors, and between the same contractor working for the state and for a private party, or for itself. It is conceded that the state has a right to protect women and children or adults from unwholesome or dangerous occupations. This law, Judge Cullen holds, does not deal with the character of the work, or with age, sex or condition of employment, nor even with the personality of the employer.

STATISTICAL ABSTRACTS.

Immigration into Boston in 1902.

The growth of the trans-Atlantic passenger traffic at the Port of Boston in the last five calendar years may be seen from the following statement.

The number of immigrants arriving at this port in 1898 was 14,020; in 1899, 19,928; 1900, 17,777; 1901, 28,060; 1902, 53,278.

It will be seen that the increase in the number of immigrants in 1902 as compared with 1898 was 39,258, or 280.01 per cent; as compared with 1901, the increase in 1902 was 25,218, or 89.87 per cent.

In addition to the trans-Atlantic immigrants at the Port of Boston, there arrived at the ports in Massachusetts from the Dominion of Canada by water during 1898, 18,113; during 1899, 25,700; during 1900, 26,883; during 1901, 24,297; during 1902, 23,047.

The largest number of immigrants arriving during the year 1902 was 14,071 from Italy, 12,211 from Sweden, 7,690 from Ireland, 5,293 from England, 4,833 from Finland. These aggregate 44,098, or 82.77 per cent of the whole number of immigrants arriving during specified year.

Imports and Exports at the Port of Boston in 1902.

The value of imports at the port of Boston in 1902 was $78,143,151, as compared with $65,337,328 in 1901, an excess in 1902 of $12,805,823, or 19.60 per cent. The value of exports in 1902 amounted to $86,655,754, in comparison with $131,667,790 in 1901, a decrease in 1902 of $45,012,036, or 34.19 per cent. Of the total value of exports $85,968,120 covered domestic merchandise, while $687,634 included foreign merchandise. The increase in the value of imports (merchandise) in the last ten years was $2,549,585, or 3.37 per cent, the total value of imports in 1892 being $75,593,566. The total value of exports during the same period shows a decrease of $2,149,449, or 2.42 per cent, the exports of merchandise in 1892 being valued at $88,805,203.

Chinese Population of Massachusetts.

Out of a total of 2,968 Chinese reported by the United States Census of 1900, 315 were native born and 2,653 foreign born. Of the native born, eight (males) have native parents, and 307 foreign parents; while of the foreign born, only one (male) was of native parentage and 2,652 of foreign parentage. It was also reported that of the 2,653 foreign born Chinese, six were born in foreign countries other than China.

Divided as to sex, the native born Chinese included 303 males and 12 females, the foreign born 2,637 males and 16 females, totalizing 2,940 males and 28 females.

Employers' Liability in Maryland.

The legislature of Maryland, in 1902, passed an act to create a co-operative insurance fund to be maintained by both employés and employers in certain perilous occupations, such as mining, quarrying, railroading, building, and excavating. This act may be seen in full under the title of "Proposed Employers' Liability and Co-operative Insurance in Maryland" in Bulletin No. 21, 1902, pages 37 and 38.

The Chief of the Bureau of Statistics and Information of Maryland in his Eleventh Annual Report states that the act has not met with the success which had been predicted, and that, notwithstanding the fact that nine months have elasped, few corporations or employers have availed themselves of the opportunities offered by the act, although the cost of the insurance is made so small as to seem almost trivial. He further states that it was the special aim of those who advocated the passage of the bill to reach the mining industry of Western Maryland, but up to March 1, 1903, not one of the mining companies had registered their employés for the purpose of protecting them.

Free Public Employment Bureau in Maryland.

In Maryland, the legislature of 1902 passed an Act authorizing the Chief of the Bureau of Industrial Statistics to establish "a free public employment agency for the use of the citizens of the State of Maryland, for the purpose of securing employment for unemployed persons who may register in said bureau or agency, and for the purpose of securing help or labor for persons registering as applicants for help or labor, and to advertise and maintain such office." A summary of the work accomplished since the law became operative, July 1, 1902, is as follows: Applications for positions, 634; applications for help, 696; positions secured, 205.

Tobacco Crop in the United States, 1902.

We present below, from the Twenty-fifth issue of the Statistical Abstract of the United States, the estimated acreage, product, and value of the tobacco crop of the country for 1902. It will be seen that the product in Massachusetts aggregated 7,417,800 pounds, cultivated from 4,755 acres, and valued at $1,112,670. The average number of pounds to the acre was 1,560, while the average cost per pound of the tobacco crop was $0.15. Over 65 per cent of the entire product of the United States was raised in three of the Southern States, *i.e.*, Kentucky, North Carolina, and Virginia.

STATES.	Area (*Acres*)	Product (*Pounds*)	Value (*Dollars*)
Arkansas, . . .	1,405	899,200	107,904
Connecticut, . .	12,725	21,785,200	3,485,632
Illinois, . . .	1,311	852,150	85,215
Indiana, . . .	7,469	6,236,615	436,563
Kentucky, . . .	322,194	257,755,200	25,775,520
Maryland, . . .	34,081	21,300,625	1,491,044
Massachusetts, . .	4,755	7,417,800	1,112,670
Missouri, . . .	2,140	1,819,000	200,090
New York, . . .	8,040	10,050,000	1,005,000
North Carolina, . .	219,263	142,520,950	15,677,304
Ohio, ...	62,949	55,709,865	3,899,691
Pennsylvania, . .	17,269	22,017,975	1,761,438
Tennessee, . . .	59,830	38,889,500	3,888,950
Virginia, . . .	182,359	136,769,250	12,309,232
West Virginia, . .	4,676	2,969,260	386,004
Wisconsin, . . .	48,422	64,885,480	4,541,984
Other states and territories, . . .	41,846	29,945,893	4,308,265
Totals, . . .	1,030,734	821,823,963	80,472,506

Relief Department — Baltimore & Ohio Railroad Co.

The membership of the Relief Department of the Baltimore & Ohio Railroad Co. at the close of the fiscal year 1902 (June 30) consisted of 40,018 persons, this number being 2,776 larger than the membership reported in 1901.

The nature of the benefits paid during the year, together with the number of payments and cost, may be seen from the following table:

CLASSIFICATION.	Total Payments	Total Cost	Average Payments
Deaths from accident on duty, ...	119	$130,338	$1,095
Deaths from other causes,	252	133,515	530
Disablements — injured in discharge of duty, .	9,526	114,928	12
Disablements — sickness and other causes, . .	9,274	146,351	16
Surgical expenses, . .	7,326	12,883	2
Totals, . . .	26,497	$538,015	$20

The contributions by the Company to the several Features of the Department during the year totalized to $91,000; of this amount, $75,000 was for the Pension Feature, and $16,000 for the Relief Feature. The aggregate amount expended by the Company was the same as in 1901.

The total number of persons on the pension roll

June 30, 1902, was 336, the total amount paid to pensioners during the year being $63,144, an increase of $7,313 over 1901.

Consideration of the Savings Feature shows that $360,487 was loaned during the year to employés for the following purposes: Building 1,420 houses; buying 1,741 homes; improving 384 houses (already owned); and releasing liens on 989 houses. An extra dividend of one per cent was declared to all depositors in the Savings Feature having accounts bearing interest at the close of the year ending June 30, 1902, making five per cent per annum. — *Fourteenth Annual Report, Relief Department, B. & O. R.R. Co.*

New German Merchant Shipping Acts.

The German Legislature has passed five new laws, four of which are dated June 2, 1902, and one March 23, 1903, all of which are to become operative April 1, 1903. By these laws the previously existing legislation with respect to the employment of seamen is amended in the following (among other) important particulars: It is now provided that when a vessel is in the harbor the hours of work for seamen shall not exceed 10, or in the tropics eight per day, and that if, owing to unavoidable circumstances, a seaman is kept at work for a longer period of time, he shall receive overtime pay for such employment. On trans-Atlantic voyages the engine room staff shall be divided into three shifts of eight hours each. Work on holidays and Sundays must be restricted within the narrowest possible limits, and in home ports seamen must not be employed at all on Sundays or holidays in loading or discharging cargoes. — *Labour Gazette, London, April, 1903.*

Pauperism in Great Britain.

According to the Labour Gazette for April, 1903, the number of paupers receiving aid in 35 urban districts of Great Britain on one day in March was 364,141. Compared with March, 1902, the numbers of paupers receiving aid increased by 14,087.

Changes in Wages in Great Britain.

For the three months, January, February, and March, 1903, the number of workpeople reported to have received advances or sustained decreases in wages was 205,963, as compared with 290,462 for the corresponding period of 1902. Of those workingmen having changes in rates of wages, 146,809 obtained a net increase averaging 4d. ($0.08) weekly per head, and 59,154 have sustained a net decrease averaging 1s. 1d. ($0.26) weekly per head. The net effect of the changes in 1903 is a decrease of £822 ($3,995) per week, compared with a decrease of £18,315 ($89,011) per week in the corresponding period of 1902.

Population of the Netherlands.

The population of the Netherlands on December 31, 1901, was 5,263,232, having increased 84,104, or 1.6 per cent, from December 31, 1900, when the population was 5,179,128, and 593,656, or 12.7 per cent, from December 31, 1892, when the population was 4,669,576. In 1901, 2,603,486, or 49.5 per cent, were males and 2,659,746, or 50.5 per cent, females. — *Statistiek van den loop der bevolking in Nederland over 1901. 's-Gravenhage, 1902.*

Eight-hour Law in Spain.

By a recent royal decree, the hours of labor in all government enterprises were limited to eight per day, with regular pay for each hour's work in excess of this number. — *Le Musée Social, Paris, July, 1902.*

Eight-hour Day in Government Service in France.

On September 16, 1899, the eight-hour day was introduced into the postal service department at Paris, in the accountants' division, the central station, and shops for the manufacture of postage stamps and the construction and preparation of various postal material. During 1900, the experiment was extended to other branches of the service, and, in 1901, the change was made permanent. On March 1, 1901, the eight-hour day was adopted in the telephone service in Paris, and, on November, 1902, in the arsenal at Toulon and in the boiler works at Lorient. — *Bulletin de l'Office du Travail, Paris, November, 1902.*

Saturday Afternoon Rest.

In England, the custom of closing factories and shops on Saturday afternoons is very generally observed, it being provided by the law of April 17, 1901, regulating hours of labor, that in textile manufactories work for textile operatives properly so called shall cease at 12 M. or 12.30 P.M., according as work begins at 6 or 7 A.M., or as an hour's rest is or is not allowed during the morning; for other employés work shall cease a half-hour later. In other manufacturing industries, work must cease at 2, 3, or 4 P.M., according as it begins at 6, 7, or 8 A.M.

In France, the custom of discontinuing work at or near noon on Saturdays is observed in but few classes of industrial establishments. The most important class, numerically, is composed of the factories situated in remote country districts, whose employés, having homes at some distance, sleep during the week in factory dormitories and return to spend Sundays with their families, so that early closing is a necessity. In nine departments there are 394 such establishments, with a working force of 31,983 persons, 22,069 of whom (1,099 men, 14,532 women, and 6,438 children) are idle during the whole or a part of Saturday afternoons.

In the cotton cloth factories in the departments of the Rhone and the Loire, early closing on Saturdays has been in vogue since 1899 as the result of a general strike. The custom was inaugurated in an establishment at Roanne, in 1879.

A third group of establishments closing early on Saturdays are of English, American, or Dutch origin, the original employés of which were, in the main, foreigners; in most cases French workmen have replaced the foreigners, and, being paid by the hour, they have objected to the loss occasioned by early closing, so that the rule is not generally observed.

There are in all 451 establishments in France in which the practice of closing early on Saturdays obtains; 37,671 persons are affected, 7,619 being men, 22,003 women, and 8,049 children. Since the promulgation of the law of March 30, 1900, restricting hours of labor to 10½ in one day in factories having a mixed personnel, the question of modifying the law so as to provide for early closing on Saturday has been widely considered, and an investigation to determine the attitude of employers and employés toward the change is being conducted by the Superior Labor Council.

In Switzerland, in accordance with a decree of the Federal Assembly issued June 26, 1902, the Federal Council has presented a bill providing that the hours of labor on Saturdays and the days preceding holidays shall be limited to nine, and that work shall cease at 5 P.M. on such days, the restrictions to affect all employés in manufacturing establishments, without regard to age or sex. — *Bulletin de l'Office du Travail. Paris, March, 1903.*

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